

COMPUTERWORLD

Inside

INFO HIGHWAYS

Cable TV's wide pipes are opening up to data transfer needs, a situation that could offer users lower costs and more options.

Page 1

HANDHELD COMPUTING

The American Stock Exchange is taking a unique approach to using handheld computers by purchasing off-the-shelf equipment at a fraction of the cost spent by its rivals. Amex has one pilot under way for options trading and is planning a June pilot for equities trading.

OLTP MONITOR

NCR unwrapped Top End Release 2.0, an upgraded open systems transaction processing monitor that includes LU6.2 connectivity and is the first to provide 3270 support.

IN DEPTH

Vendors used to deliver technology every three to five years; now it is every 12 to 18 months. To cope with this change, IS must adapt to continuous learning and rely more on users.

Vendors get caught up in middle(ware)

By Elisabeth Horwitt
BOSTON

A newly formed vendor consortium is ready to take on both the Open Software Foundation and wary information systems managers. It hopes to prove that message-oriented middleware is the optimal foundation for distributing many business-critical applications across heterogeneous environments.

Seven leading players got together last week under the newly formed umbrella of the Message Oriented Middleware consortium to determine how, in one spokesman's words, "we can convince users that Oracle or [the OSF's] DCE is not the way to go."

Middleware products in general were designed to take care of the communica-

tions chores involved in distributed applications. This includes translation among different operating systems and networking environments. They also provide management services to ensure that queries and responses get to their destinations.

Such products are beginning to catch on as users get more and more into the

DHL hits client/server turbulence

CIO leaves over strategic revamp of downsizing plan

By Elisabeth Horwitt
SAN FRANCISCO

Two and a half years after he was hired to re-engineer DHL Airways, Inc.'s information systems organization, Michael Lanier quietly resigned last month. The chief information officer left after it became clear that major pieces of the distributed client/server architecture he instigated were being canceled outright or relegated to the back burner.

"It seemed that priorities were becoming more focused on other infrastructure items, such as airplane acquisition and other investment opportunities," said Lanier, who is now consulting for DHL.

RISC start-up taps NT

Netpower offers low-cost alternative to Pentium boxes

By Mark Halper
SUNNYVALE, CALIF.

The former head of Mips Technologies, Inc. has resurfaced as chairman of a start-up that plans to market RISC workstations based on Mips' chips and running Microsoft Corp.'s Windows NT.

The company, founded by Robert Miller, joins a growing list of reduced instruction set computing workstation suppliers that will try to rival PC vendors in selling NT desktop systems and servers to corporate users once Microsoft makes the operating system available later this year.

Netpower, Inc. has scheduled its coming out to coincide with Microsoft's anticlimactic NT introduction at Comdex/Spring '93 next Monday, sources close to Netpower said. Netpower plans to start shipping products comparable to Intel Corp. Pentium-based systems running Windows NT this fall, the sources added.

Pricing for Netpower's line is expected to start at \$4,000 to \$6,000 for a model rated at about 55 SPECint with 16-bit color graphics, 16M bytes of random-access memory, 200M

Powering up

Netpower founder: Bob Miller, former Mips chairman.

Base: Sunnyvale, Calif.

Financing: \$6 million to \$7 million, the bulk from venture capitalists and the balance from co-founders, Silicon Graphics and Stanford University.

Product: Mips-based workstations running Windows NT to compete against Pentium-based NT machines.

Price: Around \$5,000 for an entry-level system.

Manufacturing: Working with Acer in Taiwan.

bytes of hard disk storage and CD-ROM support. The top of the line is expected to offer 24-bit color, three-dimensional graphics, 32M bytes of RAM and 500M bytes of hard disk storage.

PCs based on Intel's Pentium processor running NT are expected to sell at prices starting at about \$5,000.

Analysts were quick to note that, except for a niche market of power-hungry users, Intel will have an early advantage. That is because of the widely established software base already running on Intel machines that use MS-DOS and Windows.

"For two times the power, I'd take a look at RISC, but only if I were a speed demon power user," said analyst David Card at International Data Corp. "For 10 times

the power, I'd take a real good look at it."

Netpower will position the low end as a desktop workstation for design and financial analysis and will market the high end as a network, application and database server and a high-performance workstation.

Officials at Netpower declined to comment on RISC start-up, page 14

Cross-platform planning

Apple details open approach

By James Daly
SAN JOSE, CALIF.

Apple Computer, Inc., whose Macintosh interface once attracted the sharpest software developers in the business, last week fought to retain those loyalties at a developer's conference peppered with bullish forecasts, major strategy shifts and provocative new technologies.

Apple Chairman John Sculley told developers that his company is transforming itself into a more diverse business that will be better able to address the needs of mobile, cross-platform users. He is trying to divert developers from the potent lure of writing to widely installed Microsoft Corp. and Intel Corp. platforms.

To that end, Apple executives promised to bury the company's proprietary sceptor. Senior Vice President David Nagel announced that "no major technology will be introduced from Apple



Apple, page 8




Michael Lanier: Priorities were becoming more focused on other infrastructure items

Lanier said that while the rest of the package-handling industry has been "going full tilt toward client/server," few companies, if any, have succeeded in implementing such systems on a global basis.

Before he left, Lanier had completed the design and testing of a client/server architecture that consists of IBM RISC System/6000 servers and a variety of client workstations residing on

DHL, page 16

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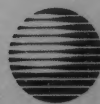
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CLIENT/SERVER

DHL Airways' new CIO is less bullish on client/server architecture than his predecessor, who has quietly stepped down. *Cover 1.* Managers building distributed systems are searching for just the right strategy for dealing with data from legacy systems and how to blend that data with data residing on new systems. *Page 65*

WORKSTATION WARS

The latest round in workstation pugilistics has Sun unveiling a desktop symmetrical multiprocessor box capable of anchoring a multigigabyte relational database. IBM, meanwhile, is expected this week to announce seven RS/6000 workstations targeting niche applications. *Page 14*

NT PLATFORMS

Microsoft will unveil Windows NT next week, but box makers are already hawking their platforms. As **Mips Technologies** and NEC introduce a 64-bit R4200 microprocessor aimed at providing Pentium-class performance for an NT notebook (*Page 15*), former Mips Chairman **Robert Miller** resurfaced at a start-up that is marketing a Mips-based workstation running NT. *Cover 1.* As DEC gears up for a **Comdex/Spring '93** launch of its NT-based Personal Systems Series, a slow ramp-up for **Intel's Pentium** breeds hardware vaporware and a better 486 market. *Page 4.*

NETWORKING

IBM SNA users trying to link LANs into a central host get a more fitting design from **CrossComm**. **Cisco** hones routing algorithms on its routers to give greater control and performance over growing internetworks. *Page 12*

Technical Sections

ADVANCED TECHNOLOGY	24
APPLICATION DEVELOPMENT	71
DESKTOP COMPUTING	37
ENTERPRISE NETWORKING	53
LARGE SYSTEMS	65
WORKGROUP COMPUTING	45

Departments

COMPANY INDEX	113
COMPUTER CAREERS	96
COMPUTER INDUSTRY	115
EDITORIAL/VIEWPOINT	28,29
FRIDAY STOCK TICKER	114
IN DEPTH	89
MANAGEMENT	81
MARKETPLACE	108



Cable TV's wide pipes opening to data transfer

By Lynda Radosevich
MAYNARD, MASS.

■ Digital Equipment Corp. and internetworking start-up LANcity Corp. will announce today an Ethernet bridge that will allow computers to communicate across 70 miles of existing cable television wiring. With interconnecting bridges, the connections can span even further.

The bridge is being used by end users and cable TV companies in several pilot projects around the country. DEC said it is talking with most major cable TV companies, including Time Warner, Inc. and TeleCommunications, Inc., about offering Ethernet connectivity services.

One of the main benefits the cable TV infrastructure offers to information systems managers is abundant bandwidth, ubiquity and public access because the cables already pass by more than 95% of homes and businesses, according to the National Cable Television Association in Washington, D.C.

Additionally, opening cable TV channels to native network-speed data transfer will mean more choices and lower prices for end users, according to analysts.

"Just as the long-distance market saw dramatic reduction in prices after deregulation in 1984, this will drive down local-exchange prices over the next five years because of increased competition between cable companies, the regional telephone companies and competitive access providers," said Rob Rich, director of public network equipment and services at Dataquest, Inc.'s Framingham, Mass., office.

Cable companies, however, said it was too early to lay out pricing plans.

Many options, many users

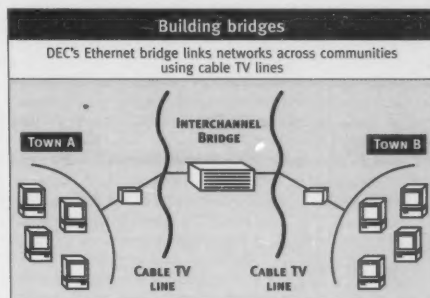
Applications for Ethernet over cable TV cabling will include interactive video, teleconferencing, group medical imaging or simply higher speed data transfer, according to DEC. Initial users will include city and local govern-

ments, educational organizations, health care providers and businesses.

For example, the city of Worcester, Mass., is linking its school, fire, police and city administration networks using the local cable TV infrastructure and DEC's Channelworks Ethernet bridges.

The flagship application will be a geographical information system that comprises information from all departments.

"We looked at cable TV, fiber and options with the phone company. What brought us to cable was the price and the 10M bit/sec. transmission speed, which is the throughput we need," said



CW Chart: Janell Genovese

Ricardo Valdes, project director of the IS department.

For the Huntsman Chemical Corp., a \$1.3 billion producer of plastic resins and polymers in Salt Lake City, selling videoconferencing to capital planners would be a lot easier if the cost of the associated bandwidth was less using cable TV, said Redge Cook, MIS manager.

Pricing is just one hurdle they must overcome to attract network users. Other hurdles include a perceived lack of reliability and recognition in the data networking market. Partnering with DEC could help the latter issue, Rich said.

Additionally, cable TV faces regulation by regional commissions, said Brian Moir, legal counsel for the International Communications Association and partner at Fisher, Wayland, Cooper and Leader in Washington, D.C. However, he said he expects local regulations will not

Corrections

- Due to an editing error, a statement attributed to Jeff Elperer at Machine Independent Software Corp. in the May 10 issue was garbled. Elperer said source code implementations yield better performance than do binary code.
- A news brief in the May 10 issue misstated the value of

Informix Corp.'s 15% equity interest in Intellicorp. The correct figure is \$2 million.

- Due to a reporting error, a story on Bachman Information Systems, Inc. incorrectly stated that products from WindTunnel Software, Inc. are not available. Bachman is currently reselling and supporting WindTunnel de-

velopment tools.

- Due to a typographical error, Contact Software International, Inc.'s name was misspelled in the May 10 issue.

- A product announcement in the May 10 issue incorrectly cited the name of Project Software & Development, Inc.

Groupware

WordPerfect offers groupware scheme

By Michael Vizard
SAN FRANCISCO

■ Looking to firmly establish a role in the rapidly emerging groupware arena, WordPerfect Corp. last week outlined an information systems architecture that revolves around WordPerfect Office 4.0 and system services provided by other vendors.

Specifically, WordPerfect executives said they plan to integrate applications that make use of WordPerfect Office with work-flow services provided in NetWare from Novell, Inc. and replication services in Lotus Development Corp.'s Notes database.

But because these services will not be tied into WordPerfect Office until the end of this year, the company still has a long way to go before it can be considered a major supplier of groupware software, said Krystyna Filistowicz, an industry analyst at Dataquest, Inc.

In particular, she noted that the Orem, Utah, company has thus far only alluded to delivering a document management system and is relying on third-party developers to deliver imaging applications.

Due early next month, WordPerfect Office 4.0 is the company's long-awaited groupware offering that combines electronic mail with a calendaring and scheduling facility.

"Providing electronic mail isn't enough anymore. You need to provide calendaring and scheduling that is tightly integrated with electronic mail," said David Clare, WordPerfect senior director of marketing for workgroup applications.

"We're here today to take another stab at showing the world that we're more than just a word processing company," added WordPerfect Chairman Bruce Bastian.

Although WordPerfect already has 2 million WordPerfect Office users, the arrival of WordPerfect Office 4.0 will mark the first time

the company has bundled calendaring and scheduling software with E-mail.

According to Bradley Boyt, systems manager at Baylor University in Dallas, the major benefit of the WordPerfect approach is that a single directory service can function as the user name and address database for both E-mail and scheduling applications.

Taking advantage

In the short term, Clare said WordPerfect will leverage the fact that WordPerfect Office is the only offering that runs on DOS, Windows, Macintosh and Unix platforms, supports a variety of SQL databases and is aggressively priced. In addition, Clare said a NetWare Loadable Module version of WordPerfect Office will be available this summer.

But Filistowicz noted that Microsoft Corp. has committed to making its Windows Application Programming Interface available on Unix and the Apple Computer, Inc. Macintosh, which means that WordPerfect's multiplatform strategy may be only a short-term advantage once Microsoft begins to expand its fledgling groupware effort sometime in 1994.

Partly with Microsoft in mind, Clare said WordPerfect has priced its product aggressively to compete with E-mail systems that do not have calendaring and scheduling.

WordPerfect Office server software is priced at \$295. A client pack, which supports five users, is priced at \$495. Also, WordPerfect is bundling the client software for its WordPerfect InForms electronic forms software free for 90 days.

Visual Basic gains access

Development tool gets database links

By Christopher Lindquist
REDMOND, WASH.

Microsoft Corp.'s latest version of Visual Basic blurs the line between the graphical development tool and the Access database by providing increased, easier-to-implement database functionality.

Microsoft said it hopes the result will be a product that crosses over from an easy-to-use tool for stand-alone applications to one that is a full-scale client/server development environment.

Microsoft also said it expects initial Visual Basic 3.0 interest from developers trying to connect Visual Basic applications to a variety of databases — a task that, while possible, was sometimes daunting with previous versions.

To make database connectivity easier, Visual Basic 3.0 includes the Microsoft Access Version 1.1 Engine, through which developers can retrieve data from a variety of back ends, including Access, Borland International, Inc.'s dBase and Paradox, SQL Server and Oracle Corp.'s Oracle. The engine also supports Microsoft's Open Database Connectivity interface for connection to other host systems.

The advantage of combining Vi-

sual Basic with the Access Engine, according to Microsoft group product manager Thomas Burton, is that users get full database functionality with general-purpose development tool flexibility.

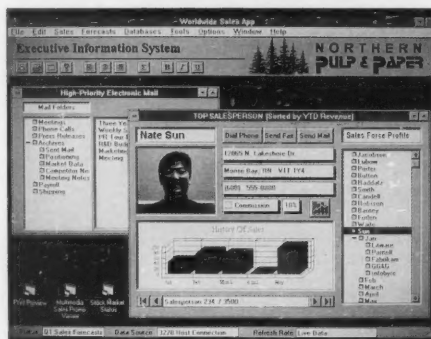
That connectivity may prove useful to at least one Visual Basic beta-test user, who said he plans to put Visual Basic 3.0 and Access

bles on a host, resulting in a decrease in the time to prototype, create and test applications.

"We're faced with trying to release applications within a reasonable time constraint before the requirements change," Clark said. The means of implementing data tables in Visual Basic are also much improved, he added.

Other enhancements include Database and Table objects, as well as "data-aware" controls that can be used to access and manipulate data from within Visual Basic applications.

The announcement of Visual Basic 3.0 comes barely seven months after the shipment of Version 2.0 and coincides with Microsoft's unveiling of the Object Linking and Embedding (OLE) Version 2.0 developer's kit [CW, May 3]. The timing is significant: Visual Basic 3.0 is also intended to



Visual Basic 3.0 eases the building of database applications

on a laptop that can then go to an end-user location for requirements analysis. The interfaces could be developed quickly with Visual Basic and tested against Access, said Jim Clark, a systems analyst at California's Sacramento Municipal Utilities District.

The developer could then go back and finish developing the application by detaching the Access tables and reconnecting the Visual Basic interface to SQL Server ta-

be the "glue" that will attach OLE 2.0-compliant applications together via OLE 2.0 Automation.

Visual Basic will allow developers to manipulate applications via object-oriented OLE 2.0 interfaces, effectively functioning as a common macro language.

It will be some time before there are significant OLE 2.0 applications to control.

Visual Basic 3.0 is due next month for a list price of \$495.

Borland prices suite to move, ups ship date

By Michael Vizard
SCOTT VALLEY, CALIF.

In a bid to aggressively grab market share in a category dominated by Microsoft Corp., Borland International, Inc. last week announced a 90-day introductory price of \$399.95 for its Borland Office application suite.

In addition, Borland began delivering Borland Office several weeks ahead of its previously announced schedule.

At \$400, Borland Office includes the Paradox for Windows database; the Quattro Pro for Windows spreadsheet, which includes a graphics capability; and a modified version of WordPerfect Corp.'s namesake word process-

ing package. The modified version of WordPerfect allows files to be merged between WordPerfect and Quattro Pro.

Borland Office is priced about \$550 less than the version of Microsoft Office that includes the Access database, Word word processing program, Excel spreadsheet, PowerPoint presentation graphics software and electronic-mail client software [CW, May 10].

The hub of Borland's overall effort to compete with Microsoft is Paradox for Windows. Borland is slated to deliver a SQL interface for Paradox this summer that will allow Paradox to function as a front-end query tool for multiple relational database offerings. In addition, Borland has already provided an Integrated Database Application Programming Interface (IDAPI) that allows applications to make calls to navigational databases such as dBase IV and SQL databases.

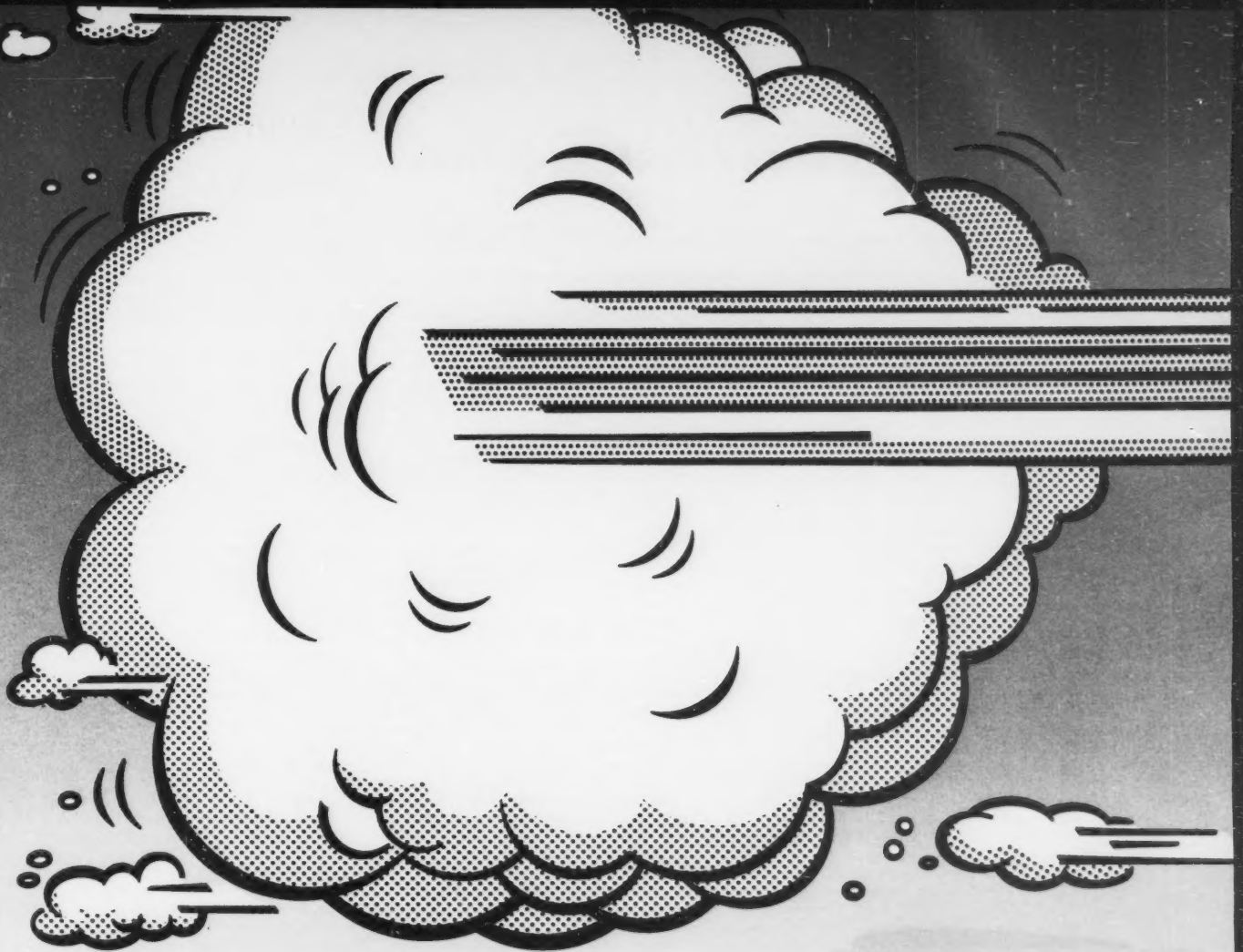
With these interfaces in place,

Borland expects to be able to leverage Borland Office sales at sites that have developed custom client/server applications using Paradox and dBase IV.

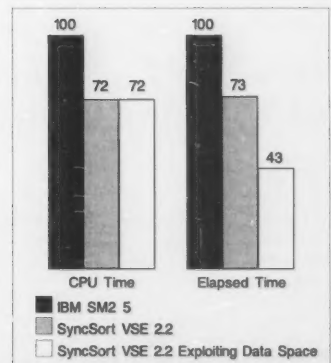
According to Vince Casarez, Borland product manager for Windows, more than 5 million developers are currently creating applications on top of PC databases from Borland. "The SQL and IDAPI interfaces will give us a way to move these people into client/server development," Casarez said.

This means that in the short term, Borland expects to compete directly with Powersoft Corp. and Gupta Corp., while in the long term Borland will add more robust features to its tools to compete with fourth-generation language providers such as Cognos Corp., Information Builders, Inc. and SmartStar Corp., he said.

Users of a DOS or Windows office automation application can upgrade to Borland Office for \$299.95.



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Next-generation PCs

Pentium dearth slows system delivery

By Michael Fitzgerald

■ Today's announcements of Pentium-based systems will breed hardware vaporware, as most users will be unable to get systems until the fourth quarter.

Demand will not drive the delay, as it has in the 386/486 market. Rather, Intel Corp.'s inability to produce chips in any quantity is what will slow system delivery. Pentium chips, which are about as easy to find as the proverbial hen's tooth right now, can be found in systems from a few large vendors as of today, but only for their most prized customers. Smaller vendors will simply have to wait.

"All that's going on right now is flag-waving by the vendors who can get chips," said Richard Zwetchnenbaum, analyst at International Data Corp. (IDC) in Framingham, Mass. IDC forecasts that only 80,000 single-processor Pentium PCs will ship in the U.S. this year.

The hardware delays may map nicely with the coming of 32-bit application software. While Pentium will improve the performance of today's software, applications will need to

be recompiled to achieve performance differences. Still, users will not gain the full benefit of Pentium performance until software vendors recompile their applications for the chip.

While Intel has worked hard to speed the recompiling process, major application vendors contacted last week said they would probably optimize software for Pentium in the course of updating products to work in 32-bit operating environments such as Microsoft Corp.'s 32-bit Windows or Windows NT.

"It makes sense to include Pentium code scheduling as part of our standard development for the 32-bit environment since that appears to add value for 486 users, and it doesn't hurt the 386 too much," said Alex Morrow, general manager of cross-product architecture at Lotus Development Corp. "But you don't get the value from just recompiling current 16-bit applications for Pentium."

Neutral parties

Many users are indifferent to the wait, saying they need to test systems before implementing them anyway.

"We'll run it through tests for a while," said Kenneth Lomasney, president of Market Knowledge, Inc., a research firm in Oak Brook Terrace, Ill., that will get an early Unisys Corp. box.

"Even a 30% performance increase will let us do more and move what have been traditionally large applications down to smaller systems. We think Pentium will have a dramatic impact on our efficiencies, both internally and for other firms," Lomasney said.

Intel claimed a 66-MHz Pentium-based system will boost application performance by almost double a 33-MHz/66-MHz DX2 and eight times that of a 33-MHz 386DX.

Those few users who have seen Pentium systems have been impressed.

David Koptik, staff software engineer at Baxter Healthcare Corp. in McGaw Park, Ill., tested a Compaq Computer Corp. DeskPro/M running Pentium. "It screamed," Koptik said.

Most announced uniprocessor systems will range from \$5,000 to \$8,000 when they do appear, although Advanced Logic Research, Inc. announced a desktop system that starts at \$2,495 (see story at left). Many vendors, however, said pricing would be set when they ship their systems or upgrade boards. Some higher end multiprocessor configurations will cost tens of thousands of dollars.

expected to ship with 32M bytes of memory, CD-ROM, six Extended Industry Standard Architecture-bus slots in a tower with five bays. Pricing is expected to begin around \$6,995, sources said.

"DEC's major task ahead is to communicate the advantages of Alpha over Pentium. . . . What they're saying is that they will give the customers a choice [of Intel or Alpha], but ideally they want to steer them toward Alpha," said Randy Giusto, an analyst at WorkGroup Technologies, Inc., a market research firm in Hampton, N.H. [CW, May 10].

But DEC is doing well with applications — the company is expected to announce more than 250 packages that will ship for Alpha AXP by July, DEC sources said (see story page 38). Meanwhile, all of its PCs — regardless of chip architecture — will be coordinated and marketed by the company's PC business group, DEC sources said.

Previously, the Windows NT PCs were handled by Vice President Bill Demmer's computer systems engineering group. DEC will use DECdirect, indirect sales channels and the growing muscle of its PC marketing organization under the leadership of Pesatori to market the NT-based PCs.

Chemical Bank names new CIO

By Nell Margolis
NEW YORK

Still in the throes of a so-far successful information systems consolidation following one of the largest mergers in the annals of banking, Chemical Banking Corp. has tapped one of its merger architects to spearhead the implementation.

Chemical's 1991 "merger of equals" with Manufacturers Hanover Corp. created a bank with \$137 billion in assets and hugely redundant IS operations.

Denis J. O'Leary, 36, who rose quickly through Chemical's executive ranks to his current post as head of merger and strategic planning at the company's Regional Bank, will become the bank's chief information officer in two weeks. He succeeds executive vice president and chief technology officer Barbara D. Capsalis, who is resigning effective June 1 to pursue alternative career plans.

Last week, as he prepared to take charge of an approximately 4,000-strong IS shop in mid-meld, O'Leary said maintaining the merger momentum would be one of his heaviest challenges.

A slew of IS initiatives undertaken to unite Chemical's and Manny Hanny's IS shops are on or ahead of schedule, O'Leary said. Most recently, the bank completed the IS consolidation of its approximately 402-location New York branch network, hooking in Manny Hanny's retail branch operations.

In addition, Joseph Ziskin, a consultant who studies technology leadership issues at the Ernst & Young Center for Information Technology and Strategy in Boston, said signals such as the bank's widespread use of Lotus Development Corp.'s Notes groupware indicate that "they realize the importance of building a skill base in the distributed computing area where [large-scale] banking is headed."

Such signals may be reassuring to those industry observers who question the wisdom of putting a nontechnologist at the helm of a huge IS operation at a time of extreme — and very fast-paced — technological change.

"If I could offer one piece of generic advice to Mr. O'Leary or anyone else about to become a bank's CIO," said New Orleans-based IS/banking consultant M. Arthur Gillis, "it would be this: Please, please do not follow the landslide of current advice that talks up business skills to the exclusion of technology smarts."

Ziskin conceded that "the perception that he's a businessman who downplays technology" could hobble a CIO. In the case of Chemical, however, he said he doubted that would happen. Citing Merrill Lynch & Co. and Nationsbank Corp. as instances of financial firms at which nontechnie CIOs are earning high marks among industry observers, he noted that "the issue here isn't technology skills or business skills; it's leadership skills."



Denis J. O'Leary, Chemical's new CIO

Pentium products

A number of vendors will mark the availability of Intel's Pentium chip by announcing new product families or enhancing current lines. Notable among the announcements are the following:

• **Digital Equipment Corp.** last week began shipping a Pentium-upgradable line of PCs, making it the first vendor to include Personal Computer Memory Card International Association drives in a server. While the new DECpc MTE systems are 486-based, they will be Pentium-upgradable. DEC will also build the Video Electronics Standards Association's VL local bus into its PCs.

• **Advanced Logic Research** will go the low-price route, announcing today a base price of \$2,495 for the Evolution V/60, a Pentium system with 8M bytes of random-access memory and no hard drive (\$3,445 with a 340M-byte hard drive). The company will also announce the Evolution V-Q file server family.

• **IBM PC Co.** is expected to announce processor upgrade cards for its Server 295, Server 195 superservers and Personal System/2 Model 95 server, as well as for its Model 90 desktop.

• **Compaq** will introduce its DeskPro 5/60M and 5/66M desktops, which will start at less than \$5,000, three new ProSignia configurations and a Pentium-based version of its SystemPro/XL. The company will also announce processor upgrade cards for its M, ProSignia and XL products.

• **Dell Computer Corp.** will introduce its 4000/XE servers, Pentium-capable systems initially based on the 486. Dell will ship these systems next month.

Compiled by Melinda-Carol Ballou and Michael Fitzgerald.

Windows NT systems push to begin at Comdex

By Melinda-Carol Ballou
MAYNARD, MASS.

Digital Equipment Corp. will go all out at Comdex/Spring '93 next week when Chief Executive Officer Robert Palmer and PC Vice President Enrico Pesatori preside over the official unveiling of the company's Windows NT-based Personal Systems series.

DEC will offer Microsoft Corp.'s NT on both Intel Corp.-based and Alpha reduced instruction set computing AXP-based platforms. The lineup of NT-based Alpha systems is expected to include two configurations.

An entry-level PC will have a 230M-byte disk, a monochrome monitor, 16M bytes of memory and an NT end-user license, with pricing at around \$5,000, sources said.

A 150-MHz Alpha-based PC with SPECint92 of about 75 is

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News Shorts

Bank taps EDS for net management

Republic National Bank of New York last week struck a selective outsourcing deal with **Electronic Data Systems Corp.** under which EDS will take over management of the \$17 billion bank's data and telecommunications networks. EDS also picks up responsibility for telecom equipment purchases and installation. The bank is in the process of consolidating its data centers.

High-tech council outlines 'Vision'

The **Council on Competitiveness** last week unveiled its "Vision for a 21st Century Information Infrastructure." The infrastructure is intended to enable all Americans to access information and communicate with one another easily, reliably, securely and cost-effectively in any medium — voice, data, image and video — anytime, anywhere.

Microsoft minces Word differences

As part of an overall drive to better integrate its applications, **Microsoft Corp.** announced last week that the next version of its Word word processing package for Windows will share about 90% of its code base with its Word for Macintosh offering. The two products will have the same file format, commands and look, and both will be numbered Version 6.0. The new version of Word will also support ObjectBasic, which is the common macro language that Microsoft is developing for its applications. In addition to upgrading Word for Windows, Microsoft also intends to deliver Version 5.0 of its Excel spreadsheet in the fall time frame, according to reports.

Banyan plans Solaris support

Banyan Systems, Inc. in Westboro, Mass., and **Sun Microsystems Computer Corp.** (SMCC) announced plans to port Banyan's Vines operating system to run with Sun Microsystems, Inc.'s Solaris operating system on its Scalable Processor Architecture-based computers. The agreement is similar to one announced between Banyan and Hewlett-Packard Co. two weeks ago, under which Vines will run on HP's Precision Architecture-RISC platforms.

Data-over-cellular matures

An updated version of the emerging Cellular Digital Packet Data (CDPD) specification was released last week. CDPD is endorsed by several carriers for transmitting data packets in the "blank" spaces of cellular voice conversations. The latest version, 0.9, provides specifications for functions such as security and network management. Contributing companies are reportedly expecting the final version, 1.0, to be released in July.

SHORT TAKES SMCC is in the market for a new president, as Sun Chief Executive Officer and President Scott McNealy relinquishes his role as acting president of the hardware subsidiary so he can focus on Sun's strategic direction. . . . **Digital Equipment Corp.** introduced the StorageWorks product line, including a StorageWorks redundant arrays of inexpensive disks subsystem, optical storage libraries for Small Computer Systems Interface and Q-bus-based systems and expansion cabinets for Alpha AXP-based platforms. . . . James C. Goetz, president and CEO at **Northgate Computer Systems, Inc.**, resigned as the company posted a \$2.1 million loss on sharply lower revenue in its fiscal first quarter. . . . **Unisys Corp.** announced that F. Ron Jenkins has been named vice president of worldwide systems integration.

News shorts, page 16

Amex seeks wireless trades

Stock exchange hopes to benefit from generic handheld devices

By Thomas Hoffman
NEW YORK

The American Stock Exchange was not the first exchange to test the use of handheld computers in its trading pits when it began a pilot project late last month. But analysts said they believe Amex is taking a more pragmatic and cost-effective approach in using the wireless communications devices than its predecessors at the Chicago Board of Trade (CBOT) and the Chicago Mercantile Exchange.

By conducting simple transactions with off-the-shelf equipment instead of the highly customized terminals used by its Midwestern peers, Amex is likely to avoid the expenses and problems experienced by the Chicago exchanges [CW, Feb. 10, 1992]. For example, analysts said CBOT has struggled to deploy feature-rich terminals for parts of its trading environment under a four-year, \$7 million prototype (see story below).

Meanwhile, Amex expects to spend less than \$100,000 for a generic six-terminal prototype for Options Index trading that member Spear, Leeds & Kellogg is testing.

The end of paper

The project is the first in a series designed to make Amex a paperless trade floor. "For our member firms, the biggest benefit is to get real-time market position analysis," said Omer F. Soykan, director of technical planning at Amex.

"Starting out with cheaper and simpler systems is a good idea," said Kenneth Dulaney, vice president of mobile business strategies

at Gartner Group, Inc. in Santa Clara, Calif. Dulaney, who worked with one of the dozen vendors that bid on the CBOT pilot, said that project became too complex. He said CBOT had asked the competing vendors to develop highly customized handheld devices, including certain features the vendors were not able to deliver in a 1-pound terminal.



Amex's Omer F. Soykan: 'Biggest benefit is to get real-time market position analysis'

Amex targeted non-mission-critical applications for its handheld terminals after reviewing projects conducted by CBOT and other exchanges. "We're not out to solve all of our trading floor applications with handheld computing," Soykan said.

Spear, Leeds & Kellogg is testing six VP5 handheld terminals from Granite Communications, Inc. in Amherst, N.H. The terminals,

which are linked to a Granite base station, are used by market specialists to transmit options trades to a PC-based risk analysis software system developed by Micro Hedge in Villa Park, Ill.

The pilot, which is expected to reduce the time and paperwork spent on options trading, should be completed by midsummer. Once full redundancy is incorporated into the Options system by early fall, the service will be offered to Amex's 19 Options specialist units. Amex's total options contract volume last year was 42.3 million.

On to equities

Next month, Amex will proceed with its second handheld pilot. Eight Lehman Brothers, Inc. brokers and clerks will conduct equities trades using Fujitsu-ICL Systems, Inc. pen-based devices and Grid Systems Corp. Palm Pads over spread-spectrum communications.

Stephen R. Schoenfeld, a managing director at Lehman Brothers who is responsible for all equities and options exchange floors and specialists operations at the firm, said he believes the wireless technologies will be considerably more cost-effective and faster than the paper-and-pencil trading mechanism that has been the status quo for the past 200 years.

"Faster speeds to our trading desks means faster communications to our customers," Schoenfeld said.

Soykan said the equities pilot should be completed by this fall and will be offered later this year to the 462 member firms.

Pitching 'pens' in the pits

Efforts begun in 1989 by the CBOT and the Chicago Mercantile Exchange (Merc) to investigate the use of handheld computers for trading have thus far received mixed reviews.

The pilots have been criticized by some analysts as lengthy, expensive and overly complex. But Dale Lorenzen, chairman of the CBOT handheld committee and a vice president at Merrill Lynch & Co., said the \$6.8 million pilots are nearing completion and will eventually cut costs and increase productivity for the traders.

CBOT/Merc recently completed the first of two pilots, in which 70 traders used Spectrix Corp. keyboard and touch-screen-equipped handheld devices to input trades, ranging from soybean options to 10-year notes, directly to a central computer system using infrared communications. Those technologies will be matched against a cur-

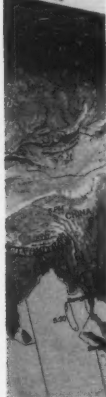
rent pilot testing pen-based handheld devices from Synerdyne in Santa Monica, Calif. The pen-based devices have complete handwriting recognition capabilities and run over spread-spectrum radio communications.

Currently, brokerages at the Chicago exchanges use keypunch operators after hours to enter paper-based trades, which are then transmitted to a clearinghouse for processing. Using wireless technologies, operators will no longer be needed, and trades will be rectified in minutes, Lorenzen said. "This should result in huge cost savings to our traders," said Lorenzen, who could not offer projected returns, even after four years of testing.

Lorenzen said a decision between the two communications formats and a hardware vendor will be made by the end of this month. He said production-ready systems will be rolled out by year's end.

—Thomas Hoffman

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PowerPC delivery dates set

By James Daly

Apple Computer, Inc. and IBM last week said they will unveil within a year PowerPC microprocessor-based workstations.

The chip — produced through an alliance between Apple, IBM and Motorola, Inc. — could be used in computers that sell for as little as \$3,000, analysts said.

Apple plans to incorporate the powerful reduced instruction set computing (RISC)-based microprocessor into a PC in the first half of 1994, while IBM is expected to have a PowerPC-based workstation by January, company officials said.

The first chip, the PowerPC 601, will be available in 50- and 66-MHz configurations, but Apple also demonstrated an 80-MHz version running on a Macintosh.

Application migration is not expected to be an issue. Apple Chairman John Sculley said the new PowerPC architecture will be 100% compatible with Apple's current line of Macintoshes based on the Motorola 68000 family of microprocessors. "It will be able to run native apps as well as existing apps without having to recompile code," Sculley said.

Apple officials also demonstrated at a developer's conference in San Francisco that existing Macintosh programs can work in such PowerPC-based systems at about the speed of the high-end Macintosh Quadra, a machine based on Motorola's 33-MHz 68040 processor. Native PowerPC applications are expected to run up to three times faster.

The 601 is the first of four planned PowerPC microproces-



IBM and Motorola last week introduced the PowerPC Tools Catalog, which provides OEMs with a list of tools and products for building PowerPC-based applications and systems.

sors and is targeted at low-end to midrange desktop systems, said Paul Ledak, microprocessor development manager for IBM technology products.

Models to follow will include the 603 for portable systems; the more powerful 604 for servers and high-end desktop systems; and the 620, a high-performance 64-bit microprocessor.

IBM, meanwhile, will sell both PowerPC and Intel Corp. Pentium-based systems. Ledak claimed the two product families will interoperate: The PowerPC will be IBM's high-end RISC line, while Pentium will run more desktop-oriented machines.

Apple officials said they also plan to offer upgrade boards for the Macintosh Centris 610 and 650, Macintosh IIVX and IIVI, Performa 600 and Quadra 800 systems.

Apple details open approach

CONTINUED FROM COVER 1

that won't have cross-platform, near simultaneous release." The announcement was met with enthusiasm from the roughly 3,000 developers in attendance, who are aware of the installed base disparity between 10 million Macintoshes and 25 million Windows-based PCs.

Developers said such cross-platform moves are crucial. "Apple is a realist. It has to be if it's going to survive," said Jeffrey Cherniss, executive vice president at Avanti Software, Inc.

Thus far, Apple's repositioning effort has been very ambitious. The Cupertino, Calif.-based firm is winding down the life cycle of its bread-and-butter Macintosh line and gearing up to replace it with a new PC line based on the PowerPC microprocessor (see story above).

Apple is also developing larger servers and handheld personal digital assistants. Sculley said he envisions all these disparate units tied together over a client/server network.

Apple's many tentacles sometimes muddy the waters for users. "It often seems as if Apple is going in too many directions at once," said Eric Joa, manager of information systems at BC Hydro in Burnaby, British Columbia. "I just hope they don't lose focus on the business needs of today while they're chasing down sexy

PowerPC plans

John Sculley boasted that Apple will ship 1 million computers based on the PowerPC chip in 1994. By contrast, analysts said only about 150,000 of Intel's Pentium chips are expected to ship this year.



John Sculley

technologies like Newton."

Nagel also unveiled a technology called Amber that was designed to make it easier to write programs that will run on both Apple systems and machines running Windows.

Amber is a set of publicly available, object-oriented source code layers that developers can write in order to interconnect applications. Currently, developers must rewrite code to run it on a different platform.

Sculley said Amber is an intermediary step to products from Taligent, the Apple/IBM joint venture charged with creating an object-oriented operating system. It will also compete with Microsoft's Object Linking and Embedding.

Amber code is expected to be seeded to developers by year's end, with Amber-generated products arriving by the middle of 1994.

Apple also announced that it is cooperating with IBM, Sun Microsystems, Inc., Hewlett-Packard Co. and Unix System Laboratories, Inc. to put the Macintosh user interface on machines running Unix. The payoff, said Morris Taradalsky, general manager of Apple's Enterprise Systems Division, would be that programs written for the Macintosh would be able to run unchanged on Unix workstations.

Taradalsky said Apple will provide a free published set of application programming interfaces that would allow both Macintosh and Unix developers to tailor their products for client/server computing.

Kash n' Karry picks Sun, Siemens for POS project

After a year of intense evaluation involving seven vendors, Kash n' Karry Food Stores, Inc. in Tampa, Fla., last week announced the selection of Sun Microsystems, Inc. and Siemens/Nixdorf Information Systems, Inc. to develop its "Store 2000" project.

At an estimated worth of \$10 million, the grocery chain's project in-

volves a companywide rollout of open systems-based point-of-sale terminals and in-store processors to 115 grocery stores. Kash n' Karry's own object-oriented development tools gave the retailer an extra edge in bargaining with the vendors.

Sun and Siemens will have access to Kash n' Karry's object expertise,

although details of the joint development work were not disclosed.

"About this time next year, Sun and Siemens are going to be exceedingly dangerous [to competitors] in the retail market," said Jim Stikeleather, director of systems development at Kash n' Karry.

—Maryfran Johnson

Symantec, Apple team on tools

PowerPC programming goal

By Garry Ray

CUPERTINO, CALIF.

Taking another step on its long march toward interoperable, cross-platform applications, Apple Computer, Inc. last week announced a variety of technology partnerships with development tools vendor Symantec Corp.

Last June the companies said they would co-develop Symantec's Bedrock application framework to allow simultaneous Apple Macintosh and Microsoft Corp. Windows software development. Last week they upped the ante by announcing plans to jointly produce a programming environment for Macintosh PowerPC systems.

"Apple will work with Symantec on native PowerPC development tools," said Steve Weyl, Apple's director of developer tools.

Bedrock is a C++-based application framework that includes preprogrammed application templates; components such as windows,

Application mortar

Symantec Corp. and Apple Computer, Inc. are working together to create an easy development path that will allow quick conversion of an application to either Windows or Apple formats. Here is how the scheme fits together:

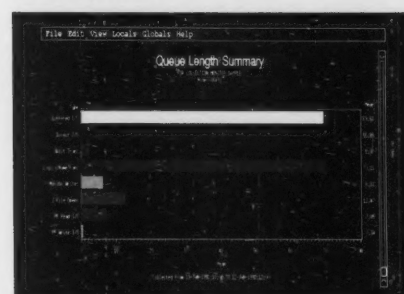
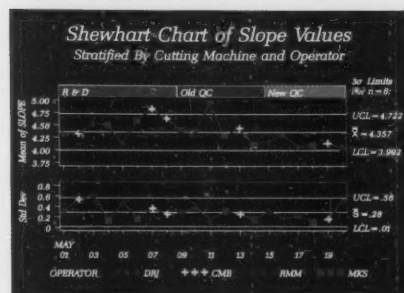
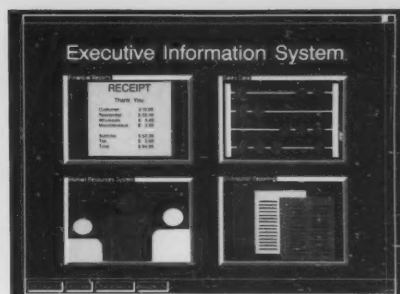
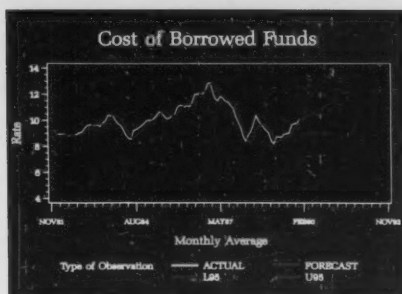
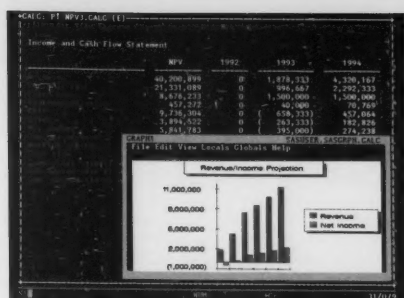
LAYER	COMPONENTS
APPLICATION FRAMEWORK	APPLICATION • CHORES • DOCUMENT • CLIPBOARD
GRAPHICAL USER INTERFACE	CONTROLS • VIEWS • STANDARD DIALOGS • EVENTS
OPERATING SYSTEM	FILES • MEMORY • GRAPHICS • RESOURCES
FOUNDATION	COLLECTIONS • STRINGS • EXCEPTIONS • INTERNATIONAL

buttons and menu bars; and functions for stringhandling, memory management and other activities. Developers can write application code to the Bedrock framework and then compile the code for deployment on Windows or Macintosh systems.

In addition, the two companies began to make good on earlier partnership announcements with last week's release of Symantec's C++ 6.0 for Macintosh.

The compiler, which Symantec Executive Vice President Eugene Wang called "the first native C++ compiler for the Macintosh," includes Apple's SourceServer — a source code management system — and ToolServer, which provides access to the Macintosh Programmer Workshop (MPW), Apple's own application framework for Macintosh programming. MPW will be replaced by Bedrock for PowerPC application development next year, according to Weyl.

In addition to the partnership, Symantec announced an upgrade to its Think C compiler and a version of C++ specifically for MPW programming. The firm also delivered its Bedrock Architecture CD-ROM to the more than 3,500 developers attending last week's conference. The CD-ROM disk contains Bedrock documentation, C++ header files and sample programs, company officials said, and is available free of charge to registered Bedrock developers.

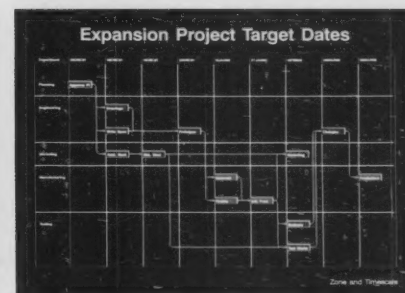
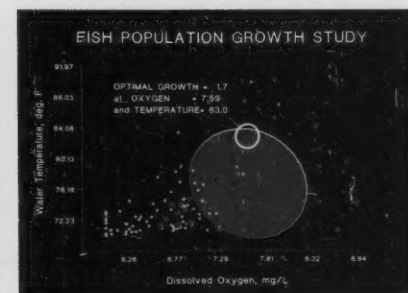
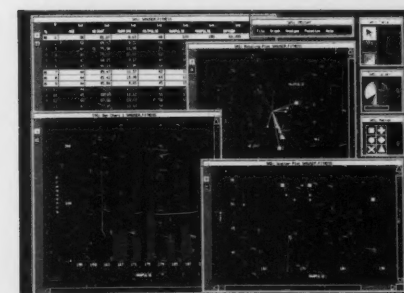
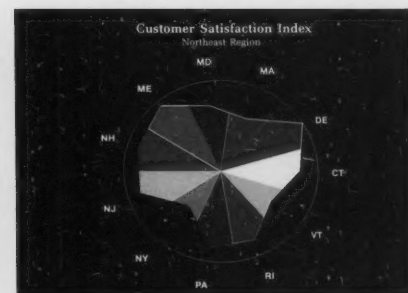
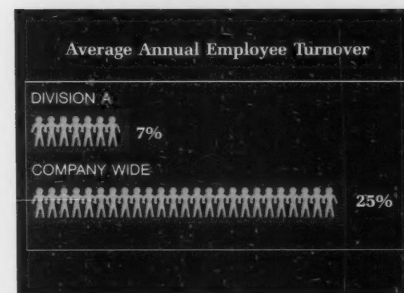


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Cincom shows distributed database with multimedia support

By Melinda-Carol Ballou
CINCINNATI

Cincom Systems, Inc. celebrated its 25th anniversary last week by revealing a distributed version of its Supra Server database that will support multimedia applications.

At its user conference here, the com-

pany also announced Microsoft Corp. Windows support for its AD Advantage application development system and a graphical user interface for Control:Manufacturing.

The new version of Supra, which is slated to ship in the fourth quarter, lets users distribute data across multiple processors on client/server networks.


Distributed features supported under this version of Supra include transaction management, updateable views, integrity enforcement and optimization and server-to-server connections.

The distributed Supra Server will run on platforms ranging from Digital Equipment Corp.'s OSF/1 and Microsoft's Windows NT-based Alpha systems to IBM's


OS/2 2.0 and Hewlett-Packard Co.'s HP/UX. It also supports MS-DOS, Windows and Apple Computer, Inc. Macintosh clients.

Cincom's distributed transaction management goes further than the two-phase commit options supported currently by most relational database management system vendors, according to company officials and industry analysts.

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Avoiding lockup

Two-phase commit is the process whereby transactions are finalized across nodes to ensure data integrity. Under Cincom's approach, three transaction partners can equally finalize a transaction, avoiding the lockup that occurs when a coordinator fails under two-phase commit.

Distributed updateable views let users have read/write views and access to multiple tables that are geographically dispersed across multiple nodes, according to Marco Emrich, director of system software at Cincom.

These capabilities proved attractive to a number of users.

For example, "We're very much interested in distributing data ... out to the shop floor so that people can have access to it where they most need it," said John Hall, a database development manager at Rolls Royce Power Engineering Ltd. in Newcastle on Tyne, England.

"We could use a distributed database for common tables and common entities ... to take the Mantis load off of the VAX and distribute it to PCs, which are replicating like rabbits," said Michael Dion, analyst at Canada's Maritime Command Data Center in Halifax. Distributed database support would be useful for sharing information about ships across the east and west coasts of Canada, Dion noted.

Perhaps of even greater significance is Cincom's support of multimedia data types and the announced ship date this summer of an Early Adopter's Software Developers Kit for developing multimedia applications for Supra Server.

Cincom's tool kit complies with Microsoft's Media Control Interface API, which will allow developers of Windows and Windows NT who use the application programming interface (API) to access and manage the data types with Supra.

"With Supra, multimedia applications which were previously stand-alone can now become enterprisewide applications," Emrich said.

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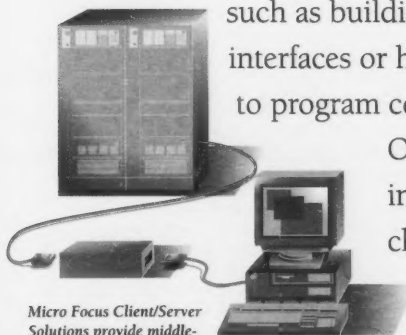
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Cisco to up router IQ

By Joanie M. Wexler
MENLO PARK, CALIF.

■The low-profile yet powerful routing algorithms embedded in routers are poised to get smarter in Cisco Systems, Inc. devices.

Market leader Cisco said last week that it intends to hone the major routing algorithms it supports on its routers to give network administrators greater control in specifying data paths through complex networks.

This means, for example, that companies could better design their networks to take advantage of tariff-based economies or protect sensitive data from insecure routes, Cisco said.

Routing algorithms—known by such alphabet-soup names as Interior Gateway Routing Protocol (IGRP), Intermediate System-to-Intermediate System (IS-IS) and Open Shortest Path First (OSPF)—are the means by which routers exchange network configuration and traffic priority information. These communications keep inter-networks running and making smart reroute decisions when there is a network change.

Both IGRP and OSPF, which Cisco is enhancing on its own devices, are used in Transmission Control Protocol/Internet Protocol networks, as is an older algorithm known as Routing Information Protocol.

Cisco said it intends to incorporate the enhancements it makes on its proprietary IGRP in its implementation of OSPF and IS-IS—the standard algorithm for Open Systems Interconnect networks. However, when operating with other vendors' implementations, capabilities will default to the lowest common denominator.

Cisco has dubbed the enhancements—due on its routers throughout the first half of 1994—"policy routing" because they allow a network administrator to implement company-wide rules for traffic and route priorities.

Timely shipment

The 1994 delivery date is none too soon, as "in 1993, you'll see the first 1,000-router network," said Todd Dagres, vice president of data communications research at The Yankee Group, a Boston consultancy. "When IGRP goes down today, it can still take minutes to update routers," while the enhanced IGRP will take seconds, he said.

The update delay, which gets propagated proportionally the larger the network grows, means "routers that aren't updated yet still route to old places, which could mean dropped packets" and other network inefficiencies, Dagres explained.

Cisco is also developing a more sophisticated version of IS-IS to allow users with mixed protocols to use one integrated algorithm on their networks. "This lowers the cost of ownership by reducing complexity of network operation," said Paulina Knibbe, Cisco product manager.

CrossComm adds high-end link

By Joanie M. Wexler
MARLBORO, MASS.

CrossComm Corp. moved into the high-end router market last week by repackaging some familiar internetworking design components that enhance reliability and allow for network growth.

The CrossComm ILAN XL80, available now, puts an added spin on hardware architectures from high-end competitors such as Wellfleet Communications, Inc. and start-up Coral Networks Corp. by focusing on the specialized needs of hierarchical IBM Systems Network Architecture (SNA) shops. The traffic patterns at such sites lean toward individual local-area networks communicating directly to a central host rather than to one another, explained Gary Wood, director of product marketing.

The XL80 reportedly addresses these environments with its "hublike" nature: LANs supported within the router communicate only via an external backbone to the host, not with one another over an internal backbone. "Our focus is hierarchical, not peer-to-peer, today," Wood said.

The LAN/mainframe connection

To date, internetworking between LANs and mainframes has been largely achieved using Token Ring LANs as the "glue," with source-route bridges on either side.

"This has been pretty bad," said Rick Villars, director of network architectures at Interna-

tional Data Corp. in Framingham, Mass. "Source-route bridges have never been at the high end of performance and have been difficult to manage."

The XL80 could help "a significant number of SNA customers who are hesitant to move to router backbones," Villars said, because "SNA networks aren't large mesh configurations," as are LAN internetworks.

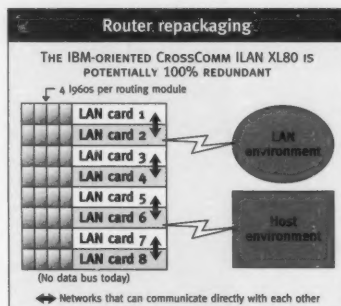
However, CrossComm shop Travelers Insurance Co. in Hartford, Conn., said it runs a balanced mix of SNA and peer-to-peer LAN traffic. "By numbers of sessions, it's true that more go

to mainframes over a LAN internetwork than are crossing bridges and routers over a WAN," said Steve Simon, senior telecommunications engineer. "But in terms of actual traffic volume, that is not true. Peer-to-peer networking is still pretty heavy."

CrossComm said the XL80 does have a dormant internal high-speed switching backbone that will eventually support both packet-switching and Asynchronous Transfer Mode cell switching—the purported "nirvana" network of tomorrow.

The XL80 aims to provide the high network availability that SNA sites are accustomed to by giving users the option of dual components throughout the system, as does competitor Coral, and by rerouting around failures or congestion in three seconds on average, Wood said.

Its distributed processor architecture, which prevents a centralized processor from being drained as internetworks grow, was introduced to the industry by Wellfleet in 1991.



CW Chart: Michael Higgins

Vendors get caught up in middle(ware)

CONTINUED FROM COVER 1

more into downsizing and distributing applications: Between 20% and 40% of the cost of developing application code comes from the code that handles communications, according to a recent IBM customer survey.

What differentiates message-oriented middleware from remote procedure call-based technology is its "queued messaging" function, which allows an application to send a request or a file to another application across the enterprise, then do something else while it waits for a response, said John Mann, senior analyst at The Yankee Group in Boston.

Message-oriented middleware products "absolutely deserve to be taken seriously" as the answer to many of the application development problems faced by downsizing corporations, Mann said.

"I know of a customer spending a million dollars to write [message-oriented] middleware of their own, then hearing about one of these products in a presentation and dumping their implementa-

tion on the spot," Mann said. The justification: "the money they would save in future development and maintenance costs" when having to expand the home-grown system to handle additional system and network environments.

Improved credibility

However, the industry has suffered from user cynicism and press inattention, primarily because it is made up mostly of small, young companies, analysts said. IBM gave the industry a much-needed credibility boost recently when it announced Message Queue Interface (MQI), a proposed standard for interfacing applications to message-oriented middleware. Last month, IBM shipped its first product based on the interface.

State Street Bank in Quincy, Mass., has been using Systems Strategies, Inc.'s message-oriented middleware, Ez-Bridge Transact, to interconnect applications running on Tandem Computers, Inc., IBM, Digital Equipment Corp. and Unix systems, said Richard Ross, a vice

president at the firm. Systems Strategies will shortly provide customers with a free upgrade to IBM's MQI.

The product "guarantees message delivery and allowed us to cut development time for complex applications from several months to several weeks," Ross said. "Message and queueing is critical to us as we globalize and distribute applications, since it frees application developers from the vagaries of telecommunications."

Message-oriented products have attracted a number of user companies in the Consortium for Object Oriented Technology. They address a broad niche of corporations whose distributed applications need to exchange messages on an occasional basis, with guaranteed delivery, across wide-area connections, said Bob Marcus, coordinator of object-oriented technology at Boeing Computer Services and consortium founder.

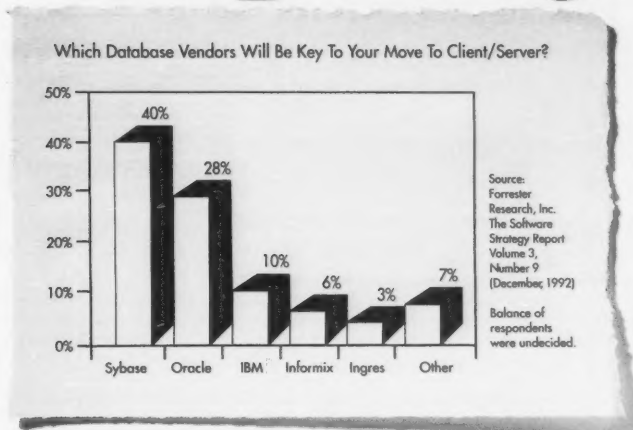
Examples of ideal message-oriented applications include concurrent engineering and financial environments where a single customer query might need to get back information from a half-dozen applications on different systems, Marcus said.

Take a message

The initial meeting of the message-oriented middleware consortium, sponsored by International Data Group publication *Network World*, involved seven companies: Horizon Strategies, Inc.; Digital Equipment Corp.; IBM; Momentum Software Corp.; PeerLogic, Inc.; Systems Strategies, Inc.; and Covia Technologies. The following motions were passed:

- Maintain ongoing communications with user groups such as the Consortium for Object Oriented Technology.
- Meet on a regular basis. Ideally, this would result in vendors implementing some of their rivals' best ideas in their own products, said The Yankee Group's John Mann.
- Produce a white paper that includes a glossary defining the terms and concepts of middleware technology and how it fits into the middleware landscape.

The analysts have graphed the future of Client/Server computing.



And they have also spoken.

In recent issues of their ongoing reports, four of the most respected computer industry analysts have taken an unbiased look at Sybase, and its vision of enterprise-wide client/server computing.

They were impressed.



For copies of the full reports from Forrester Research, Gartner Group, Meta Group and New Science Associates, please call 1-800-8-SYBASE.

IBM plugs gaps in RS/6000 line

By Jean S. Bozman
AUSTIN, TEXAS

■ IBM is expected to announce seven additional models to its IBM RISC System/6000 workstation line tomorrow.

The boxes include an entry-level deskside server and workstation-to-host three-dimensional graphics and low-end desktop workstations. The announcements follow a nine-model RS/6000 rollout in February.

"This really is a continuation of what we started in February, which is more specialization in the RS/6000 family," said Dave Cassano, marketing vice president at IBM's Advanced Workstations and Systems group.

Low-end workstations will get a performance boost of 35% to 40%, while some desktop workstations get special graphics capabilities.

Greater choice may help some users make buying decisions, said Terry Daniels, resource manager at BP Exploration Alaska's data center in Anchorage. "There have been instances where we have gone to another vendor because of special needs IBM couldn't meet," he said, including support for visualization features.

Of 90 workstations at the BP site, nearly 40 are IBM RS/6000s; many others are Sun Microsystems, Inc. workstations.

The special packaging may make it easier for users to configure their systems, but it also may confuse the market, said Nancy Stewart, senior industry analyst at Dataquest, Inc. in San Jose, Calif.

However, Susan Morpeth, associate director for midrange systems at Infocorp in Santa Clara, Calif., said the fine-tuning should help IBM compete with workstation rivals Hewlett-Packard Co. and Sun. "The RS/6000 group knows they can't compete in the old IBM ways," Morpeth said.

Pricing for a low-end base RS/6000 with 16M bytes of memory is expected to dip below \$5,000, IBM said, although the AIX operating system will cost an additional \$650. The new desktop models are expected to range in price from \$9,000 to \$27,000, and the new entry-level deskside server, configured with 32M bytes of memory and 1G byte of disk memory, is expected to cost about \$26,000.

Line expansion

New RS/6000s include the following:

	POWERSTATION 230	POWERSERVER 550L
Processor	Power RISC architecture	Power RISC architecture
Clock speed	45 MHz	41 MHz
Memory range	16M-64M bytes	32M-256M bytes
Fixed disk	Diskless	2G bytes
Micro Channel slots available	2	4
Expected price	Under \$5,000	\$26,000

Source: IBM

CW Chart: Nancy Kowal

Symmetrical multiprocessing

Sun adds oomph, shrinks box

By Jean S. Bozman
SAN FRANCISCO

Sun Microsystems, Inc. likes to talk about the way it delivers pizza-box computing to users' desktops, but this time it has cooked up a deep-dish pie.

Sun's SPARCserver 1000, announced at SunWorld here last week, is a symmetrical multiprocessing (SMP) server that can support 50 to 500 users concurrently, Sun said.

The machine, which is 19 in. wide and 21 in. long, runs up to eight 50-MHz SuperSPARC chips in a desktop or desk-side configuration. It can be configured with 135 to 1,000 reduced instruction set computing million instructions per second and up to 2G bytes of memory, allowing it to anchor large relational databases. Sun began shipments immediately.

Whatever its performance, the new server's packaging breaks new ground, said David Smith, director of Unix systems research at International Data Corp. in Framingham, Mass.

"The fact that you can now get an eight-way SMP system on a desktop is significant," Smith said. "That's not been done before. It's an extension of their innovative packaging into the server area."

Industry analysts were quick to note that Sun said the SPARCserver 1000 outguns a series of workstation servers from IBM, Digital Equipment Corp. and Hewlett-Packard Co.

But some analysts said a closer comparison would be to data center SMP machines from Sequent Computer Systems, Inc. and Pyramid Technology Corp. or to the NCR Corp. 3500 SMP machine.

"They've implemented true SMP," said Paul McGucken, a program director at Gartner Group, Inc.'s Midrange Computing Strategies Group, of Sun's new server. "Any process-

or can service any interrupt and any [Unix] system call."

The high-end SPARCcenter 2000, introduced in November, also supports SMP. However, Sun's older 690 server was not truly an SMP machine, McGucken said, noting that the Sun 690 had TPC/A benchmark results about one quarter that of the SPARCserver 1000 running Oracle Corp.'s Oracle 7 database.

Last week, Sun also announced a 20-processor model of the SPARCcenter 2000 that uses 50-MHz chips.

Users who knew about the machine said it is a cost-efficient alternative to buying scores of workstations. "We can keep adding processing and DASD to it," said Jim Stikeleather, director of systems development at Kash n' Karry Food Stores, Inc., a \$1.2 billion grocery chain in Tampa, Fla. His firm installed a four-processor SPARCserver 1000 two months ago.

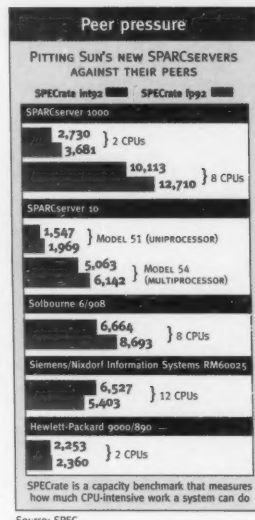
"Rather than adding additional SPARCstation 2s or SPARCstation 10s, which we use to run from five to 10 users, we'll probably put out SPARCserver 1000s and run 50 to 60 users off of them," Stikeleather said.

The 115-store chain is preparing to roll out a point-of-sale and in-store processing network that will be jointly developed with Sun and Siemens/Nixdorf Information Systems, Inc. to automate the flow of information from the cashier level up to corporate offices (see story page 8).

More than a few wistful Sun server users were amazed at the new Scalable Processor Architecture machine's

price/performance compared with older, tower-type Sun servers. The new server costs from \$36,700 to \$131,300.

"It would replace the Sun 630 multiprocessor we bought," said Jerold T. Hahn, computer specialist at the U.S. Forest Service in St. Paul, Minn. It also bridges a gap between desktop workstations and a high-end Sun host, some said.



RISC start-up

CONTINUED FROM COVER 1

company or product plans.

Netpower's plans help to set the stage further for a square-off within NT circles of Intel vs. RISC platforms.

Microsoft NT product manager Rich Barth maintained last week that neither the Intel nor Mips architecture would run NT better than the other, noting that Microsoft has used both platforms for NT development.

Other RISC platforms should also optimize NT use, Barth said, provided that the companies developing their own ports — Digital Equipment Corp. and Intergraph Corp., for example — effectively recompile NT source code.

Mips in mind

Meanwhile, some PC companies are also making plans to use the Mips chip set for building Windows NT-based systems. For example, Acer America Corp. plans an R4000-based Windows NT machine priced around \$3,500, and an R4400 Windows NT machine priced around \$4,500.



Robert Miller to lead start-up

Companies that plan RISC-based Windows NT machines, along with the chip they will use, include the following:

Alpha: DEC, Ing. C. Olivetti & Co.

Mips: Acer America, Netpower, AT&T Federal Systems, Carrera, Deskstation Technology Corp., Silicon Graphics, NEC Technologies, Inc.

Other: Intergraph (Clipper).

Miller is a former Data General Corp. executive who ran Mips and stayed on with Mips after it merged with Silicon Graphics, Inc. early in 1992. He formed Netpower in February of this year with a number of ex-patriots from other workstation vendors, including former Sun Microsystems, Inc. Vice President of Research and Development Ed Frank.

Other founding executives include Ralph Mele, vice president of sales, who joins from massively parallel systems vendor Maspar Computer Corp. and who was previously with Silicon Graphics;

Edward Stritter, vice president of development, who joins from Mips; Craig Martin, vice president of manufacturing, who ran materials and manufacturing at Mips; Walter Pienkos, vice president of administration; and Jorge Tittinger, director of operations, who also joins from Mips.

Nonfounding officials include Lynda Hargrove, vice president of marketing, who was marketing director for Hewlett-Packard Co.'s Unix minicomputer operations. And the company plucked at least one staff member from the Intel camp, naming former Intel Pentium marketing director John Novitsky as director of product marketing.

About 80% of Netpower's capital reportedly comes from venture capital backers.

IBM, Intel revamp joint chip plans

By Michael Fitzgerald
BOCARATON, FLA.

A 10-year joint development effort started by IBM and Intel Corp. in November 1991 is searching for a reason to exist.

Spokeswomen for both companies said the Noyce Development Center's employees were told a month ago that the focus of the center would be changed from its original charter. Intended to develop ways to integrate more functions into the microprocessor, it will now concentrate on developing low-power chips. To do this, the center is being moved from its base here to Folsom, Calif.

But a source close to the effort disputed this, commenting that "they can say whatever they like, but Intel has picked

up its toys and gone home."

In addition, both companies already produce low-volt versions of their processors, and it was unclear why they would continue to fund development of such products.

Sources within IBM said Intel was unhappy with IBM's aggressive push into the microprocessor market, and this,

coupled with Intel's relative lack of success in its SL processor line, had caused Intel to pull out. Currently, IBM personnel remain here, while Intel's engineers have gone back to California, the spokeswoman confirmed.

Industry analysts were not overly surprised by the change in focus and said the development center had started with

a good idea that went in the wrong direction for the market.

"Intel's experience with the SL has shown that there really isn't a lot of need for integrated processors," said Michael Slater, editor and publisher of the "Microprocessor Report," an industry newsletter published in Sebastopol, Calif.

Intel had touted its SL processor family, which integrated several other logic components into the microprocessor, as a way to build better portable systems.

Mips' chip targeted at NT notebooks

By Stephen P. Klett Jr.

Mips Technologies, Inc. is slated to announce today a low-power, low-cost reduced instruction set computing (RISC) chip aimed primarily at notebooks running Microsoft Corp.'s Windows NT.

The 64-bit, RISC-based R4200 microprocessor will initially be manufactured by NEC Corp. It may also show up in Unix desktops and portables if such a market develops, said Dave Corbin, director of marketing at Mips.

The chip is scheduled to ship to system makers late this year.

The chip was designed to reduce the power consumption of portable computers, Corbin said.

For example, he said, notebook users running applications that require lesser amounts of processing power will be able to switch to a reduced-power mode that allows the chip to operate at one quarter the normal frequency. Unused portions of the chip are automatically turned off.

High-power performance

Corbin said Mips' goal with the R4200 is to provide performance comparable to high-power chips such as Intel Corp.'s Pentium processor.

The R4200 measures 9.2mm by 8.8mm — roughly one quarter the size of Intel's 32-bit Pentium chip. It will run at 80 MHz and deliver performance of 55 SPECint92 and 30 SPECfp92.

Pentium, expected to debut in systems this week, runs at 66 MHz and delivers 64.5 SPECint92 and 56.9 SPECfp92.

While analysts said the R4200's price/performance level was impressive, they were skeptical of how ripe a market the chip would enjoy.

"Low cost/high performance is a good thing, but how practical is it?" asked Ted Julian, an analyst at market research firm International Data Corp. in Framingham, Mass.

Mips would not say when R4200-based notebooks would begin to appear.

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News Shorts

Ingres previews development tools

The ASK Group, Inc.'s Ingres Products Division last week said it is partnering with IBM to optimize Ingres software for IBM's RISC System/6000 workstations. The two companies will also jointly market products. At its user conference, Ingres also previewed enhanced features of its Ingres/Windows 4GL graphical application development tool set. Ingres said it plans the following enhancements within 24 months: Ruby, a graphical report writer; Amethyst, a graphical user interface-based code generator; and Jade, an enhanced version of the basic Ingres/Windows 4GL tool set.

Intel targets notebook maker

Intel Corp. last week asked the U.S. International Trade Commission to investigate Twinhead International Corp., a Taiwan firm that makes computers based on chips from Intel competitors Advanced Micro Devices, Inc. and Cyrix Corp. Intel charged that Twinhead's AMD- and Cyrix-based notebooks are built in such a way that they infringe on an Intel patent involving the way the microprocessor works with memory and paging software, such as Microsoft Corp.'s Windows.

Legent plans TCP/IP transfers

Legent Corp. will this week announce an XCom file-transfer product for Transmission Control Protocol/Internet Protocol networks. It had been usable only in IBM's Systems Network Architecture networks. Legent will also unveil five workstation products for Microsoft's Windows, including Paramount, a new product for graphical display of mainframe performance data, and N-Vision, a new VTAM application for network access management.

NCR extends wireless network

NCR Corp. announced a wireless adapter for notebook computers with Personal Computer Memory Card International Association Type II sockets. The \$695 adapter will transfer data to other wireless computers or to a wireless hub at speeds up to 2M bit/sec. across 800 feet of open space or 200 feet blocked by walls and other barriers using spread-spectrum technology.

IBM fires up LAN access beta

IBM stuck its toe into the remote local-area network access market waters last week when it encouraged users to beta-test its nascent offering code-named "Thunderbird." Thunderbird software can be downloaded off CompuServe, Inc. or IBM bulletin boards.

SHORT TAKES ObjectDesign, Inc. in Burlington, Mass., announced ObjectStore, an object-oriented database for Novell, Inc.'s NetWare LAN environments; it is scheduled for release next month. . . . CNA Insurance Cos. in Chicago installed an NCR/Teradata Corp. DBC/1012 parallel processing system and 20 NCR 3445 servers for decision support applications and to complement its IBM mainframes. . . . Transarc Corp. announced pricing, availability and distribution plans for its DCE and Encina on-line transaction processing products on SunSoft's Solaris operating environment. Separately, Digital Equipment Corp. announced DCE for OSF/1 software. . . . BT North America, Inc. fortified its network by offering customers a security products portfolio. . . . Internetworking vendor Wellfleet Communications, Inc. said it is building dial-up flexibility into its routers by implementing a three-phase rollout plan during the next year that allows users to leverage the economies of public switched network services.

DHL client/server turbulence

CONTINUED FROM COVER 1

Token Ring local-area networks at various locations of DHL Worldwide Express' western hemisphere division [CW, Nov. 30, 1992].

An IBM Enterprise System/9000 mainframe acts as a repository for master files, including customer files and historical package shipment data.

A telemarketing application that has been running in a production environment since last October helped boost user productivity by 138%, Lanier said in an earlier interview.

Despite these successes, DHL is putting off or canceling client/server implementations of major pieces of its track-and-trace and customer service systems. DHL is not abandoning the new architecture but rather is going into an "evolutionary rather than revolutionary" mode of implementation, according to Alex Aycinena, Lanier's successor. Aycinena was formerly head of DHL Systems' global application development group.

No enthusiasm

Indeed, sources close to the company indicated that management may never have been totally gung ho about Lanier's sweeping migration plans. DHL was never totally committed to "throwing out all the old stuff and putting in new," according to Aycinena.

DHL Airways cannot afford to hold on to outmoded systems or

become less technologically aggressive if it wants to compete effectively in the U.S. market, according to Jim Eckler, a partner at KPMG Peat Marwick's transportation group in Toronto. Neither of the two market leaders, Federal Express Corp. or United Parcel Service, Inc., is slacking off on its drive to implement the latest computing and networking technologies in order to better serve customers. Key areas include "the need for timely, up-to-date information on shipment status: where it is, and when it's going to arrive," Eckler said.

**Mirror image**

DHL Airways' parent, DHL Worldwide Express, is working on its own open systems architecture. Michael Lanier said that the architecture is likely to be a "mirror image" of DHL Airways' IBM RS/6000-based client/server system. However, a source at DHL Systems said DHL Worldwide is looking at other types of Unix systems.

Since Aycinena came on board, there have been no major changes to the original \$15 million budget that was allocated this year for migrating several systems to the new architecture.

Nevertheless, some applications that were slated for re-engineering and downsizing under Lanier's original plan are staying as they are. For example, customer service applications that were originally slated for migration to the RS/6000-based architecture this year will remain on centralized Pyramid Technology Corp. hosts at a DHL data center in Tempe, Ariz., Aycinena said. "We have no problem with those applications."

The applications provide users and customer service agents with current and historical information about package shipment status. Lanier had originally planned to

Still flying

DHL Airways is going ahead with some of its original plans for migrating some key systems to the IBM RS/6000 client/server platform.

One such system is Easyship customer service centers, which respond to local customer queries about package status and billing issues. Migration should be completed on schedule, by year's end, said Alex Aycinena, vice president of IS.

Also on schedule, Aycinena said, is a rollout of electronic links to the Easyship system, which would enable customers to call up invoices, generate shipping labels, do package track-and-trace queries and order pickup and delivery from local workstations.

Still hanging in the balance, however, are PC systems in some 200 field offices where couriers go to enter the latest data on package status. Those systems were originally slated to migrate to the RS/6000 Token Ring architecture this year, said Michael Lanier, Aycinena's predecessor. Their current status is uncertain.

—Elisabeth Horvitt

move the applications down to the more scalable RS/6000 platform and to a different database system.

The current nonindexed file structure makes it extremely time- and system-consuming to generate a report on, say, the last three weeks' shipments for a dozen customer sites, Lanier said in an earlier interview.

Oracle, US West plan info service

By Kim S. Nash
SAN FRANCISCO

Oracle Corp. and US West stepped into the hotbed of interactive television last week with plans for a "software engine" that will manage the many thousand transactions and terabytes of data to be generated by blue-sky concepts such as video on demand and multimedia at-home services.

Blueprints call for massively parallel servers — from an as-yet undetermined vendor — running Oracle databases to anchor the system, which will convey signals to consumers via US West telecommunications gear, the firms said.

Interactive TV might be too new

and fast-paced for "old-line, industrial-strength" companies such as Oracle and US West to handle, said Joseph Garber, management consultant at A. T. Kearney, Inc. in Redwood City, Calif.

"The business belongs to smaller, nimbler firms used to dealing with desktops, not great galumphing companies used to dealing with MIS types," Garber said.

The companies hope to unveil in September the guts of a database server system based on current Oracle software and massively parallel hardware designed to manage voice, video and data transactions.

The goal is to let users in home, education and business arenas

download customized information using hardware devices from any vendor, including palmtop computers, PCs, TVs and Nintendo sets, among others.

For example, traveling executives could tap into a multimedia messaging network from a laptop computer to see parts of a videotaped speech from the boss, then read and respond to electronic mail appended to the speech by colleagues.

Such an interactive system, which would have to handle many terabytes of data both quickly and accurately, is best run on massively parallel computers, according to Larry Ellison, chief executive officer at Oracle.

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Reach out and see someone — with no extra network charge

By Joanie M. Wexler
NEW YORK

AT&T last week presented the industry with a telephone that brings a second human sense — sight — to the public telephone network.

AT&T's \$3,295 Picasso Still-Image Phone allows users to combine near-TV-quality color pictures with voice traffic across the phone network without subscribing to any special services, such as switched 56K bit/sec. lines or Integrated Services Digital Network (ISDN), said Robert M. Kavner, group executive of AT&T Communications Products.

Users press a "send image" button on their Picasso phone to transmit images stored in a PC, camcorder, VCR, photo CD player, electronic camera or document scanner. A television, PC monitor or color PC printer receives the image in about 10 seconds, he said.

Kavner said Picasso is initially meant for businesses "without high-capacity networks" but with far-flung colleagues wishing to discuss images in real time, rather than traveling or waiting for overnight delivery services.

Helpful for discussion

For example, Joseph Barba, project director at worldwide manufacturing and engineering firm Foster Wheeler U.S.A.



AT&T's Robert M. Kavner said Picasso aids businesses with far-flung colleagues

Corp. based in Clinton, N.J., bought two Picasso systems for viewing and discussing his blueprints with colleagues and with customers located across the globe.

Barba said he can "pay for Picasso by saving one trip to the Middle East," where he is currently supervising a refinery upgrade project for a client that is attempting to make its factory processes more environmentally safe.

Barba described his phone system as so old, he "doesn't even remember what kind it is." And to use ISDN (a switched service) to see images, his private branch exchange would have to be ISDN-capable, and he would have to pay for ISDN services, which generally cost about 1½ times as much as "plain, old telephone service," or "POTS."

Meanwhile, upscale department store Nieman Marcus said it will soon begin testing Picasso for "collaborative shopping." Picasso should allow customers in its 27 stores nationwide to examine high-quality merchandise, such as precious jewelry, that is available only in a particular store, said E. Dean Liles, chief information officer.

And Marriott Corp. announced that it will make Picasso available at its convention center hotels in meeting rooms or private chambers.

Kavner mentioned several other pos-

sible Picasso applications:

- Insurance adjustments, where photos are sent back to headquarters directly from an accident scene, "and an estimate is made on the spot."
- Advertising and photography agencies, for sharing photos and designs with remote customers and colleagues.
- Long-distance learning.

Picasso has a "zoom" feature that allows a user with a mouse to circle a portion of a picture and enlarge that section

for closer inspection. "This is a capability I can't get with the actual document," Barba noted.

There is no extra network service charge for an image-enhanced phone call using Picasso, Kavner said.

The phone's compression techniques and processing power — equivalent to four Intel Corp. 486 chips — mix the media across low-speed analog or digital lines comprising today's POTS network, Kavner said.

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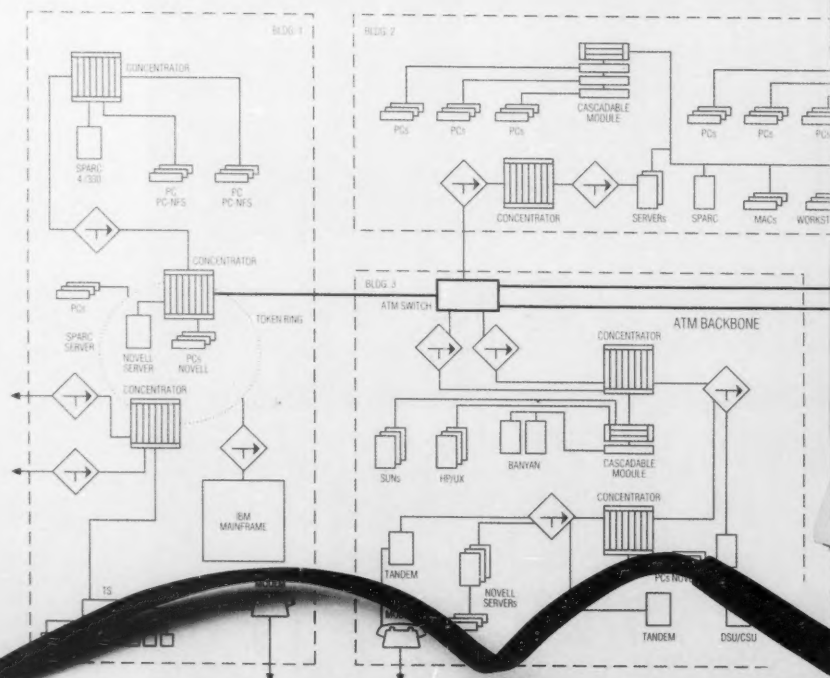
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NCR adds 3270 features to OLTP monitor

By Thomas Hoffman
SAN DIEGO

NCR Corp. last week added LU6.2 connectivity and 3270 terminal support to its Top End transaction processing monitor, garnering analyst kudos in the process.

Top End Release 2.0, which manages transactions within mixed hardware en-

vironments and operating systems, is the first distributed on-line transaction processor (OLTP) monitor to offer 3270 terminal support, analysts said.

The 3270 support will enable Top End to help IBM mainframe shops downsize to distributed platforms while retaining their investment in 3270 terminals.

"The 3270 support is clearly unique,"

said Peter Kastner, vice president at Aberdeen Group, a consultancy in Boston. He noted that competitors such as Unix System Laboratories, Inc.'s Tuxedo, IBM's CICS/6000 or Transarc Corp.'s Encino transaction processing monitors do not offer this feature.

Conversely, providing LU6.2 links allows Top End 2.0 to catch up with the

competition. Analysts said its inclusion is important for NCR.

"LU6.2 is an absolute requirement for these monitors to interoperate with IBM-based systems," noted Donna Bleakley, a research analyst at D. H. Brown Associates, Inc. in Port Chester, N.Y.

Top End Release 2.0 was designed to run on NCR's System 3000 line of Unix machines and is in the process of being ported to a slate of Unix platforms from Hewlett-Packard Co., Sun Microsystems, Inc., IBM and Pyramid Technology Corp. Release 1.0 has been available since April 1992.

NCR is working with Independence Technologies, Inc., a Fremont, Calif., software developer, to create those ports, noted Jim Fischer, NCR Top End program manager. The Top End ports to the HP and Pyramid ports have been completed and are available now; the Sun port is done but will not begin shipping until June; and the IBM RISC System/6000 port is expected by September, Fischer said.

Since Top End began shipping last year, NCR has signed up 50 to 60 customers, Fischer said. Early users include a major U.S. airline and a large retailer, both of which are using Top End to run between an NCR/Teradata Corp. DBC/1012 parallel processing host and several IBM MVS-based systems.

Though the customer base seems small, analysts said that is a healthy start for the first release of a Unix transaction monitor.

"For an early product like this, that's pretty good," Bleakley said. "In the Unix world, there aren't that many transaction monitors. Plus, there are multiple nodes at the sites that are using Top End."

Top End Release 2.0 will become available this month on NCR platforms, including the System 3000 machines. Availability for the non-NCR platforms has not yet been determined, Fischer said. Pricing for a typical Top End configuration will range from \$4,000 to \$18,000, depending on the size of the server.

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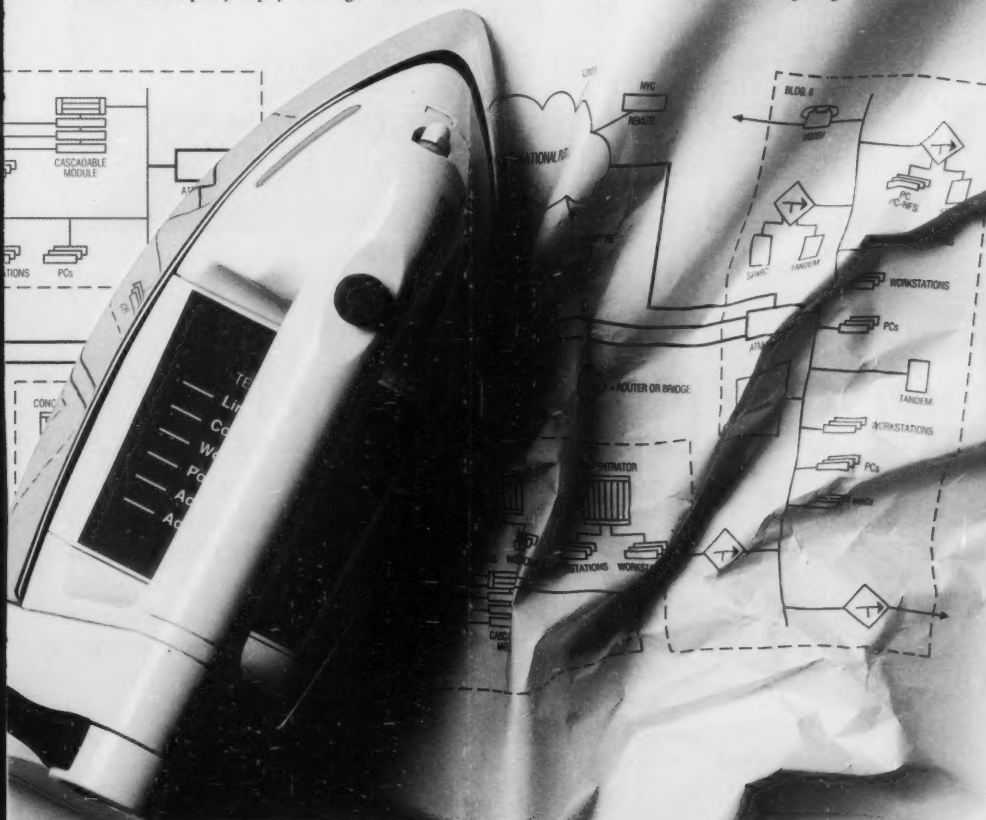
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Added support

Other features added to Top End Release 2.0 include workstation support for Microsoft's Windows Dynamic Link Library and IBM's OS/2 2.0 operating system. Top End earlier supported Microsoft's DOS and Windows and multivendor Unix remote clients.



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8:00 Home Over breakfast, you check your calendar on your PowerBook Duo. The day looks like it'll be a breeze. You'll put a few finishing touches on the Q2 forecast presentation that's due in a couple of days, return a few calls, and have a free afternoon (for a change).



9:15 Your Office You slide your PowerBook Duo into the Duo Dock and start working. Suddenly, your e-mail chimes. Your boss wants you on the noon shuttle to Boston, to present the Q2 forecast to his boss. Also, a client wants to see you ASAP. You hit the eject button and go.



2:50 Borrowed Office A colleague is at lunch, so you borrow his Duo Dock. You log onto e-mail back at the home office and learn your group has just won a new piece of business. You incorporate this news into your presentation (and change a few colors while you're at it).



3:30 Conference Room You clip on the Duo MiniDock and run the presentation from your PowerBook Duo. Everybody's impressed — especially the guy who asks you a series of tough questions about a six-month-old project. You've got all your files, so you've got all the answers.

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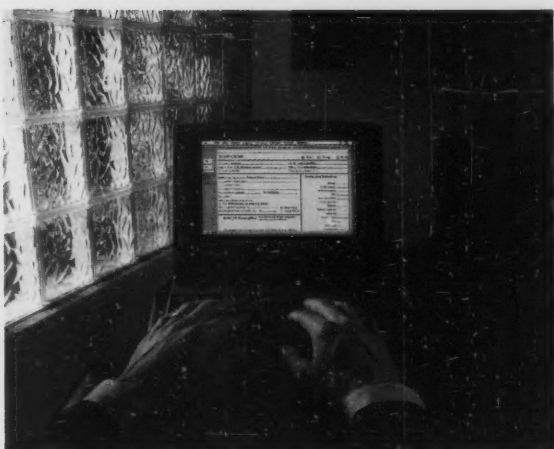
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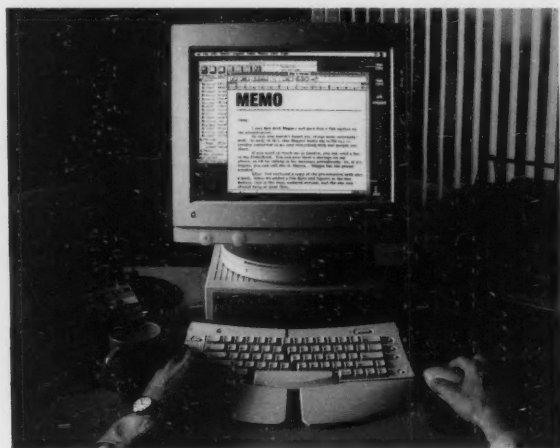
Model	PowerBook Duo 210	PowerBook Duo 230
Weight	4.2 pounds	4.2 pounds
Memory	4MB exp. to 24MB	4MB exp. to 24MB
Storage	80MB	80MB or 120MB
Display	9-inch backlit	9-inch backlit
Battery	Up to 4.5 hours	Up to 4.5 hours
Speed	25 MHz 68030	33 MHz 68030



11:10 Your Client's Office That \$5 million project the client told you was off last week? It's on again. And due in two weeks. You type up a few job orders, which you'll fax from your PowerBook when you get to Boston. Now, however, you have to catch a cab for the airport.



12:40 Noon Shuttle All the files and software you use at your desktop are right here with you. You pull up the Q2 presentation and make the revisions to reflect the new assignment. Then you write a quick memo to your team, to make sure that everything's on schedule.



7:00 Your Office On the way home, you swing by the office to tie up a few loose ends. You see your boss. He heard the meeting went extremely well, and wants you to fly out and present to the people in London. Tomorrow. You send out a quick memo to update your staff.



8:30 Living Room Since you've got all your files and software right there with you, you could write a report, study the new research data or finish up those performance reviews. But hey, enough is enough. You settle back in your recliner and play a few rounds of Tetris.

you through a day like this.


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PowerBook Duo from Apple 

When storage is state of the art

Systems need opens door for new magnetic, optical, flash memory products

W

By Ellis Booker

hile storage technologies somewhat lag behind the performance gains of microprocessors, vendors are rushing a variety of the technologies to meet three broad market needs: affordable peripherals for desktop multimedia computers, very small devices suitable for the new generation of handheld computers and specialized storage subsystems able to manage the terabytes of data that will feed the next generation of massively parallel processing supercomputers.

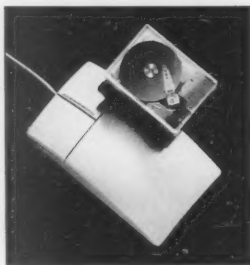
From a technical standpoint, the most significant achievements are in the last two categories. Interestingly, there is wide consensus that "storage" will not consolidate to a single media but will continue to comprise a variety of often-competing technologies. These include the following:

Magnetic

The venerable hard disk and magnetic tape have not stood still amid the onslaught of the optical disc and other storage media.

According to Jim Porter at Disk/Trend, Inc. in Los Altos, Calif., optical technology has been a "severe disappointment" to the vendors that thought it would eclipse the magnetic hard disk marketplace. "At any given capacity, [optical] still costs three times as much, is slower and has a larger form factor," Porter explained. He estimated that 263,000 5¼-in. and 185,000 3½-in. rewritable optical drives will ship this year, compared with 40 million hard disks in 1992.

Recent developments in magnetic include the following: Hewlett-Packard Co. last year took the lead in developing the smallest commercially available hard disk, a package weighing a single ounce. In March, HP announced a second version of its Kittyhawk Personal Storage Module, increasing the capacity of this 1.3-in. device from 21.4M bytes to 42.8M bytes. The Kittyhawk conforms to the Personal Computer Memory



HP's Kittyhawk II PSM, labeled the world's smallest disk drive, can store the equivalent of 28,778 typed pages of information

Card International Association (PCMCIA) Type III format with a height of 10.5mm, and future systems for the 3.3mm-tall PCMCIA Type I standard are projected.

HP has already announced agreements with two makers of pen-based systems—EQ, Inc. in Mountain View, Calif., and Dauphin Technology, Inc. in Lombard, Ill.—and it will imminently announce relationships with major camera manufacturers that will use the drive to replace film in digital cameras.

Meanwhile, IBM recently announced a 1G-byte 3½-in. drive that is just 1-in. thick. The IBM unit reportedly has the highest "areal density" in the industry, some 350M bytes per square inch.

Optical

Complaints about the speed of optical disc storage are diminishing, as the capacity and transfer rates of this storage technology increase.

"Not long ago, it wasn't unusual for optical to work at 200K bit/sec.," said Randy Dieterle, vice president of engineering at Qstar Technologies, Inc. in Rockville, Md. Today, he reported, transfer speeds have doubled,

and the capacity of 5¼-in. media, which had been standardized at 640M bytes, now approaches 1.3G bytes.

Analysts observed that breakthroughs in optical will be tied to breakthroughs in semiconductor lasers. A number of companies, notably 3M Co. and Sony Corp., are working on semiconductor lasers

that emit blue light. Current systems emit 780 nanometer red light, a wavelength that is twice as long as the blue. Blue laser semiconductors would increase storage of CDs and CD-ROMs 2.2 to 2.8 times.

Semiconductor flash

More rugged and less power-hungry than disks, flash memory cards are now sold with eight 1M-bit chips, providing a total of 1M byte of storage. Intel Corp., the leading proponent of the technology and now on its fourth-generation product, predicted flash memory will cost \$1 per megabyte, down from about \$30 per megabyte, by the year 2000.

Chips with 16M bytes of storage are expected to be feasible by then as well.

Surprising some, magnetic media has continued to make gains in the age of optical storage.

But most analysts predicted that the cost per megabyte of magnetic media will beat flash memory for the foreseeable future. On the other hand, flash could win the day for portable systems—pen-based

notepads and digital cameras—that require less than 50M bytes of storage.

The speed of flash, which is measured in the fractions of milliseconds compared with the tens of milliseconds for magnetic hard disks, could be an ace in the hole for other uses.

"This is part of a larger plan of Intel's [to use flash] as a transfer device," said Linda Helgerson, president of The Disc Co., a consulting and publishing firm specializing in storage in Falls Church, Va. Unlike magnetic or optical media, Helgerson said, only flash has the speed and I/O needed to hold and process large amounts of data, such as the contents of two to four CD-ROMs.

'Volumetric' storage

What if bits could be recorded not only on the outer surface, as is the case with tapes and disks, but also through every plane of the media? This volumetric, or three-dimensional, approach to storage, still very much in the laboratory, is under investigation at Tamarack Storage Devices, Inc., a commercial spin-off of Microelectronics and Computer Technology Corp. in Austin, Texas.

Tamarack, formed last November, now expects its first holographic storage system to be avail-

Supercomputer need 'urgent'

A pressing issue is how to make storage systems that are massive enough and fast enough to feed the next generation of massively parallel supercomputers. Work in this area is urgent, according to experts in the field, who contend that today there are not any storage systems capable of running with the massively parallel processing architectures that will soon be commercially available.

"There's a crude rule that for every gigabyte you need to move a megabyte/sec.," said Dick Watson, a project coordinator at the National Storage Laboratory (NSL), a consortium formed last May at Lawrence Livermore National Laboratory in Livermore, Calif. "So, if you're doing a teraflop, you need at least a gigabyte/sec. of I/O."

Transfer rates in the 500M byte/sec. to 1G byte/sec. range will be needed for conducting so-called Grand Challenge supercomputer projects such as world weather modeling and analysis. For instance, Lawrence Livermore climatologists now wait more than 10 hours to retrieve a month's worth of atmospheric modeling data from storage. These same researchers would like to access this data in minutes.

The NSL is looking at ways to run hierarchical storage systems in parallel to create what it calls a High Performance Storage System. This goal, Watson noted dryly, involves "a lot of serious software issues related to mapping the data."

able in the first quarter of next year. If its technique of stacking multiple holograms in one place works, Tamarack's storage system could be 10 times denser than existing disks or tapes and could offer data access and data transfer 10 to 1,000 times faster than existing media.

Semiconductor-based flash memory will not overwhelm magnetic or optical but could win the portable computer/personal digital assistant arena.

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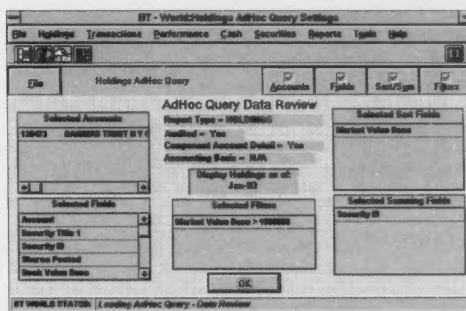
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We'll leave out some names to protect the innocent. But a big company with thousands and thousands of PCs wants to place a very large hardware order. The company has lots of large and small iron, much of it carrying a blue, three-letter logo. So it solicits bids from IBM and a much smaller clone maker.

IBM, with roughly six or seven times the PC sales volume of the clone maker, should have far lower unit costs. And because the customer is also a big user of other IBM products, IBM should look at this deal in a much broader context than just the sale of some Personal System/2s.

The bids come in. The clone maker's is a lot lower. Furthermore, the clone maker will flex its unit price (likely downward) over the life of the contract should hardware prices drop. IBM has no such provision in its contract proposal and remains immovable in further discussions. "Here's our price; here's our terms; take 'em or leave 'em."

The customer leaves 'em.

IBM CEO Louis V. Gerstner Jr. is relatively new at IBM. But the pledge of decentralization at the company and the corresponding nimbleness and flexibility are not. Customers have been promised a departure from the account-controlled, mainframe-focused forces of the past.

If nothing else, stories like this — and rest assured, there are others — should give Gerstner a clear sense of the challenge ahead of him. It is clear that many of the old ways are indelibly ingrained in some people at IBM.

To date, Gerstner has been concentrating on a corporate overhaul, bringing in key executives to head areas such as finance and accounting. Published reports have him planning meetings with Microsoft about a possible warming of relations between the two companies.

Mr. Gerstner, here's a piece of free advice: Set aside a solid month with nothing to do but visit major customer sites. The company will run itself in your absence, more or less, and other people at IBM can speak in your stead to the Wall Street analysts. Things won't get much worse.

You'll learn more from IS directors in 30 days than you'll glean from a year's worth of boardroom meetings in Armonk. The customers will tell you that after 30 years of budget growth, their budgets today are flat or declining. That's why they can't tolerate inflexibility in contract negotiations.

They'll tell you that pricey mainframes have a definite place in their future plans, but not unless the mainframes are more easily integrated into a world of emerging standards in which IBM is a player, not the standards setter.

They'll tell you that, with 25% turnover in their ranks, they don't have much time to clean up their rat's nest of noninteroperable systems.

And therefore neither do you.

Bill Laberis

Bill Laberis, Editor in chief



Regulation debate

In a proceeding apparently aimed at "900" services such as chat lines and stock quotes, the Federal Communications Commission is considering ways to regulate the advertising and billing for dial-up computer services.

And in another proceeding aimed at developing more regulations for "video dial tone," the FCC is considering, for the nth time, whether to subject computer service providers to telephone access charges similar to the access charges that long-distance companies pay to local telephone companies.

Computer service providers, such as CompuServe, have long been exempt from access charges due to the rate shock that likely would ensue if such providers suddenly were required to pay high access charges instead of the comparably lower business rates they now pay.

While the access charge exemption may be relatively safe, the regulation of advertising and billing for dial-up computer services is unpredictable and will most likely be determined by input received from the computer industry and end users.

Susan J. Bahr
Gaithersburg, Md.

Scoop on OOP

Don Bureson's article on object-oriented phenomenon, "Getting the GOOD GOOP on OOP" [CW, April 5], was both amusing and disturbing. Too many IS managers are nontechnical as it is. We should not promote "buzzword-re-

liance" in any form — much less with respect to a phenomenon as significant as object-oriented programming (OOP).

In my days as a lowly programmer, I was amazed at my supervisors' lack of technical sophistication. After listening to a soliloquy saturated with object-oriented buzzwords from my manager, I asked her to define OOP. All she could do was spew out a list of canned phrases. This clearly demonstrated there was no real understanding of OOP or any acronym that begins with OO.

As a paradigm that binds problem-solving with the problem at hand rather than through the limitations of structured tools, object-oriented thought can propel all facets of computer technology to a new level of excellence. This will only happen if we rise to the challenge.

David B. Ciolkowski
New York

Talking software

I for one do not view contracting for software as an adversarial process, as described in "Licensing plea gets mixed reviews" [CW, April 26]. Customers want to use our software; we want to license it. Where's the conflict? Free market economics teaches us that there is a price point that will let our customers profit from our software while letting us earn a profit.

My company would welcome a level licensing playing field that lets software compete on features, performance and price and not give a competitive advantage to those firms that obtain their revenue through "unreasonable upgrade fees, rigid licensing options

and inflexible contracts," in the words of your editorial "Fighting back." We would prefer to negotiate price and options with customers and to stop spending time negotiating defensive contract terms with which customers feel they need to protect themselves from "some software suppliers."

Charles A. Mills
President
Firesign Computer Co.
San Francisco

Buyer beware

They say "if you want something done right, do it yourself," but even this cliché doesn't apply to the situation described in "Do your own number-crunching" [CW, April 19].

The writers are "working under the assumption that dumb terminals cost one-third less than workstations," but where do they buy their equipment? A good-quality dumb terminal costs roughly \$500, whereas a ready-to-run workstation in a client/server environment costs no less than \$5,000 and often closer to \$10,000.

Caveat emptor!

Steven Salemi
Santa Fe, N.M.

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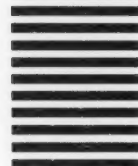


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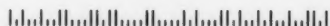
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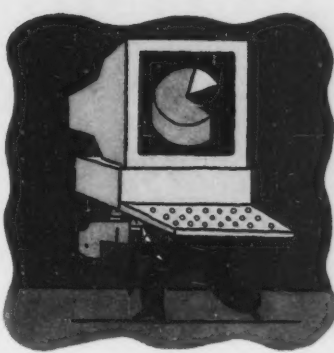
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This is freedom from drudgery?

David A. Kelly



sion of information generated by computers has not dramatically increased our productivity. Rather, it is weighing us down.

In the past, a business might have wanted a monthly report on the number of customers, sales and so on. However, with the latest computers, the business now has the ability to generate weekly, daily, hourly reports. It can create reports tracking individual employees' sales per day, sales per hour, sales per minute.

Undoubtedly, computers have simplified the basic tasks of accounting, but they have also given rise to whole new options and potentials. They have decreased people's work loads by 30% while adding 300% more work.

Computers have expanded people's jobs sideways, not upward. Instead of just typing a document, secretaries are expected to typeset it, size it and graph it. They now must know publishing, graphic design and aesthetics.

Don't get me wrong. I love computers. But I think the utopian idea of computers performing all of our menial tasks and freeing our energy for creative thinking has just been crushed by the weight of this hour's latest sales reports.



Kelly is a client/server and systems integration consultant based in West Newton, Mass.

Once upon a time, computers were supposed to free us from the drudgery of work. We would all have a supermainframe on our desk and in our pocket, and all the nitpicky items on our to-do lists would be crossed off automatically.

As a result, we would be free to explore one area that few of us ever had the luxury to investigate: creative thinking. Computers would carry the firewood, draw the drinking water and provide the milk and honey while human beings conceptualized fantastic new products, ideas, services and solutions.

That was the plan. But if you're like me, you haven't arrived in this promised land.

To be sure, there have been some revolutionary changes: Most workers now have desktop PCs more powerful than the mainframes universities had in the mid-1970s. But has this increased processing power translated into a reduction of grunt work? Have computers provided us with time for creative, human-only type work? The answer is a resounding no.

Instead of computers reducing work, they have, paradoxically, increased most people's work loads. The reduction of grunt work has been limited to a few small areas, such as calculation and repetitious tasks.

But, in the vast majority of areas computers have affected, the result is that a small number of menial steps have been replaced by a new

and broader collection of more complex tasks. We've been given high-tech lawn mowers that allow us to cut our grass in half the time, but we're now told we have to mow all the yards in town.

Computers' ability to crunch numbers and re-array them for different scenarios, to revise and retype documents in a flash, has also created more work.

Unless it is carefully controlled, the computer's ability to create information fast outpaces the user's ability to absorb it. Instead of using computers to save time, people use them to shift and recompile information. The explo-

Airlines could teach manufacturers a thing or two

OPEN MIND by Esther Dyson

Manufacturing productivity and revenue could both be improved if manufacturers used information as aggressively as some service industries do.

Take PCs as an example: Except for increasingly frequent price cuts and some retail discounting, a certain model will cost the same wherever you purchase it. Moreover, if it is back-ordered, you'll just have to wait and take your turn; you can't pay a premium to have it delivered early (unless maybe you are a very big customer).

This applies to a broad range of goods, not just PCs. But isn't it a little silly? Why not create a clean and honest market for people willing to pay the extra charges?

One reason, of course, is that the requisite software and pricing systems would be extremely complex. Consider the airline business: If you want to fly from Dallas to Austin, about 200 miles, it may cost you \$200 or \$20, depending on when you're going, what day of the week, when you buy your ticket, how long you're staying and so on.

The science (and art) of pricing airline seats is called yield management. This means air-

lines attempt to maximize the total yield (revenue) by a carefully managed trade-off between units sold and prices charged. The Saturday night stay doesn't interest airlines, but it's their way of separating people who are price-conscious from those who aren't.

This balancing of supply, demand and pricing is good business for airlines because their product is transitory: If an airline doesn't sell a

seat at any price, it vanishes forever. That, of course, does not apply to tangible things like computers. Or does it?

Suppose you start to think of selling goods as selling time on your manufacturing line—embodied as products. Suddenly your manufacturing line is something to be scheduled as tightly as an airline.

Until recently, that didn't make much sense. The cost of developing and managing the information was too high compared with the potential gains. But, in our increasingly efficient (or competitive) economy and with increasingly powerful and cheap information systems, those trade-offs are beginning to change.

Some manufacturers are already starting to do it in a small way. Just as some transit systems and utilities, such as the phone company,

have always had peak and off-peak times, manufacturers are beginning to quote a rush price and a regular price.

But most manufacturers aren't acting from good information. They just know that they have a four-week lead time and they quote that regularly. They don't know how to price a two-week order or whether they could make money delivering next Friday but not next Wednesday. They don't manage for underutilized capacity or overbooking the way airlines do. The time management function has been more an issue of moving things from warehouses, rather than making them to order.

But that is about to change. Goods are expensive to inventory even when they're cheap to make. New products, such as Intellection's Rhythm production scheduling tools, let manufacturers not just change schedules, but work fast enough to do what-ifs, reallocate resources and see the impact on their schedules and costs right away.

The next step will be for them to adjust their prices accordingly.



Dyson is editor of "Release 1.0" and "Rel-EAST," newsletters on new technology and new computer markets in Eastern Europe.

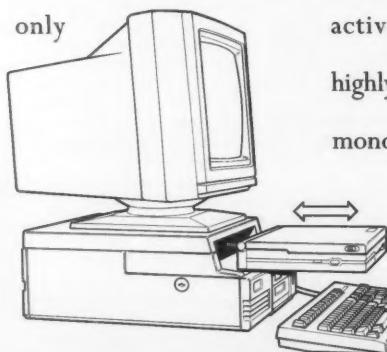
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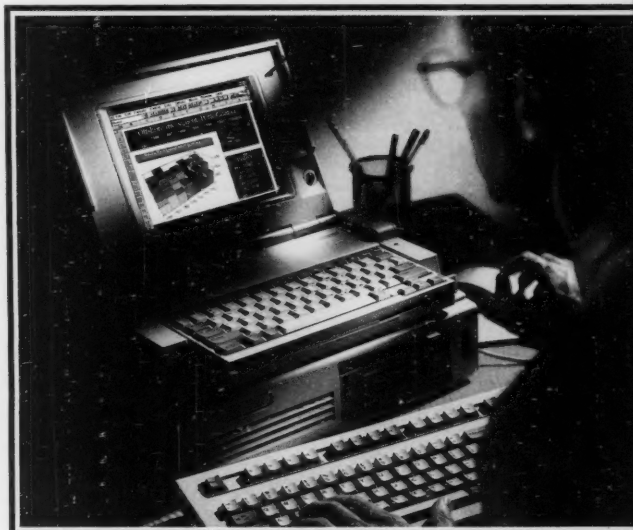


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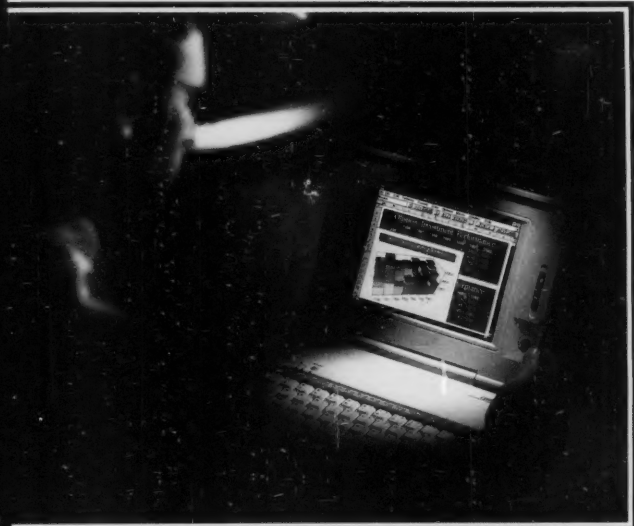
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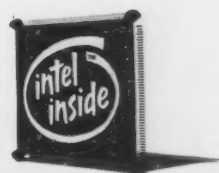
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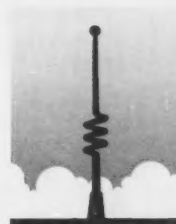
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Commentary

Charles Babcock

The reach of NT

Microsoft's reach with Windows NT extends far beyond the desktop. In the company's own vision of the future, NT will reside on powerful servers and manage everything between the PC and the mainframe — if it doesn't replace the mainframe altogether.

Some of the features that will be built into NT show such a commitment to becoming the manager of this space that the established aspirants, VMS, MVS/ESE and Unix, should consider them-



mainframes: "For the first time, there will be a top-to-bottom system."

selves put on notice.

Microsoft is not making any secret of these ambitions. At DB/Expo '93 in San Francisco May 4, Bill Gates cited the scalability of Windows NT from the smallest PC to minis and

Microsoft is not merely talking big; it is acting big with a massive commitment to make NT an integrating force. The Advanced Server version will be a scalable operating system that can function as a powerful network manager and application server. Two good examples: IBM's SNA Server and the Hermes system management application, both of which will be built into NT Advanced Server. For those who think of Windows NT as an extension of the fumbling Windows 3.0 environment, consider this: SNA Server in NT will make the full resources of the IBM SNA network available to users of MS-DOS, Windows, Windows NT and OS/2.

If the writer of a client/server system for the desktop wanted her program to connect to data generated by a mainframe IMS application, she could tap an application programming interface on the SNA Server, using a standard LU protocol such as LU0. The LU protocol "is the only thing the writer needs to worry about. The SNA Server takes care of the connections to the mainframe and IMS application," said Vesa Soumalainen, SNA Server product manager.

Soumalainen logged onto an IBM NetView session from his Windows NT desktop, generated a NetView session and managed a neighboring Windows NT server from it.

Right connection

The SNA connectivity is not focused on one or two specifications and protocols from SNA's sprawling laundry list. On Soumalainen's desk sit stacks of specifications for suppliers of specific hardware device drivers and 3270 terminal emulators. SNA's Advanced Peer-to-Peer Networking is one of a few areas not supported because "it's an evolving area."

SNA Server allows a client to connect to one or many hosts over a variety of connection paths. It supports LAN protocol Named Pipes over NetBEUI, TCP/IP and others, and NetWare's IPX/SPX.

The other major feature mentioned earlier, the Hermes system management application, will become part of NT Advanced Server in the fourth quarter. Named for the Greek messenger of the gods, Hermes will deliver messages to NetView or an NT Advanced Server for network management. It will also give network managers the ability to inventory resources allocated to each PC on the network, to automatically distribute and install copies of software, to roll back an incomplete installation or to perform remote diagnostics and controls.

Other parties can claim to do pieces of what is being integrated into Windows NT Advanced Server. NetWare for SAA gives the NetWare user access to the SNA network. But no one is integrating as many system management capabilities.

Let the buyer beware: NT in its Advanced Server form is big. You may be getting more than you bargained for if you aren't planning on managing your whole shop with NT. On the other hand, if enough copies of client NT are installed, all this functionality will be handy.

Babcock is *Computerworld's* technical editor. His MCI Mail address is 575-2737.

The 5th Wave



By Rich Tennant

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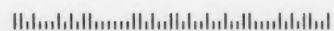
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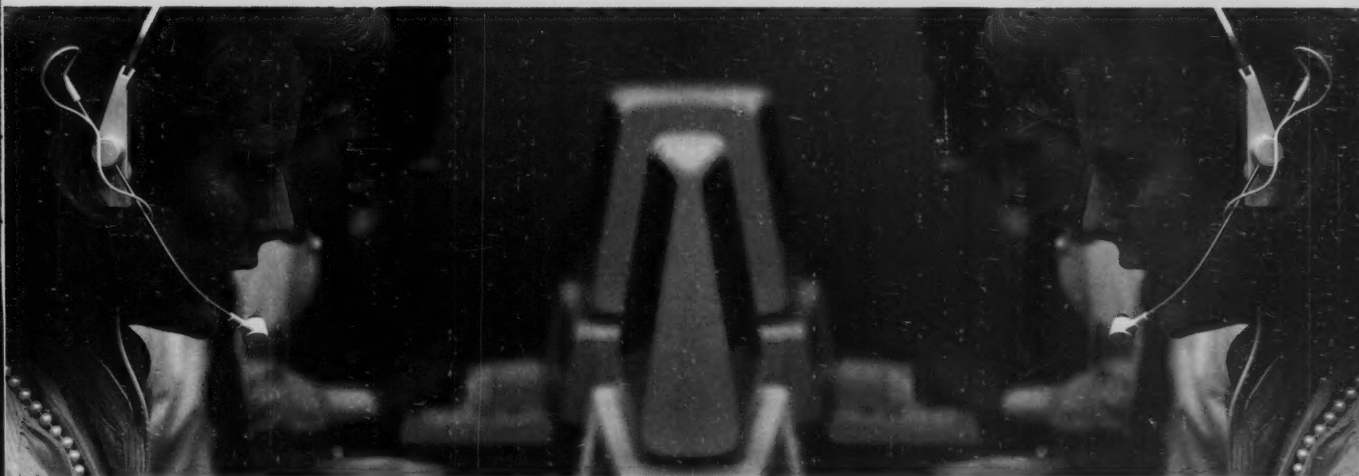
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Desktop Computing

SUPPORT FOR FASTER
EISA, 38
COMPRESSION UTILITY
COMPLICATIONS, 40

DOS 6.0 sales not bitten by reports of bugs

Microsoft claims product
has 90% satisfaction rating

By Christopher Lindquist

Despite claims of having shipped some 3 million copies of MS-DOS 6.0 in its first two months, Microsoft Corp. still faces complaints that the product is not exactly ready for prime time.

Published reviews and bulletin boards are reporting serious, sometimes crippling, bugs in the new version of an old operating system — for example, data files being irreparably corrupted.

However, other users are reporting that they have seen no cause for concern with the product. One CompuServe user, who requested responses from satisfied MS-DOS 6.0 users, said

DOS use has
been estimated
at 40 million
copies
worldwide.

he received a number of replies from customers who had installed multiple copies of the operating system with little or no incident.

Microsoft, meanwhile, is claiming that MS-DOS 6.0 maintains a satisfaction rating of 90% and has fewer bugs per unit reported than any of the Top 10 Microsoft applications. However, the company has acknowledged that the technical support lines for MS-DOS 6.0 are still being flooded with calls, and it noted that the MS-DOS 6.0 development team had been placed on the phones to help with the more serious problems.

In general, user response to the bug reports, both on the CompuServe support forum and on other bulletin boards, ran the gamut from outrage to contentment, with many customers maintaining a wait-and-see attitude toward purchasing MS-DOS 6.0 until the truth is wrong from the situation.

Among the trouble reports are problems with MemMaker, the Microsoft memory optimizer, and DoubleSpace, the data compression utility. The most noticeable complaint is with cross-linked files, which can result in data loss.

While some users noted that cross-linked files were the result of using DoubleSpace, others indicated they had noticed the problem without the data compression utility being installed.

For their part, Microsoft technical representatives advised customers experiencing difficulties to check for incompatibility between certain BIOS versions and memory managers. Several users reported that turning off write caching, a means of speeding disk access, had seemingly solved the problems.

However, still other users said they were going back to MS-DOS 5.0. And a few noted that they felt they were being ignored by the technical support staff.

Object orientation

Move to OLE no easy task

By Christopher Lindquist

Attendees at the recent Object Linking and Embedding (OLE) 2.0 Developers Conference in Seattle came away with a software development kit, OLE 2.0 shoelaces and few illusions about the scope of the task in front of them. That task will no doubt result in OLE 2.0-compliant applications — but not likely anytime soon.

The developer's kit contained a

large number of tools; documentation, including the OLE 2.0 marketing slides; a programmer's reference; and source code for OLE 2.0-compliant applications — all intended to aid programmers in their attempts to create OLE 2.0 applications.

But even with that assortment of aids, Microsoft Corp. made it clear to developers that the job ahead was not going to be easy — even telling independent software vendors that they should devote a full-time programmer to the task of preparing for the move to OLE 2.0.

The complexity of programming for OLE 2.0 may limit the number of applications supporting it in the near future, though several companies, including Corel Corp., Shapeware Corp. and Microsoft, have promised OLE 2.0-compliant applications by year's end. Just what functionality will be implemented first remains to be seen.

Possibly the biggest challenge facing developers will be the shift to an object-oriented, specifically a Component Object Model (COM), framework for their applications. COM defines a specification for

"Windows Objects" that allows applications to communicate via object-oriented interfaces. For example, an OLE 2.0-compliant word processor could tell an OLE 2.0 graphics package to create a graphical representation of a written outline.

However, for this functionality to work well, developers said, many applications will have to be rewritten to properly expose the OLE 2.0 interfaces. That will be a challenge, according to several developers at the conference.

It is not an insurmountable challenge, however. "It's another universe," said Steve Schauer, a developer at Wilson WindowWare in

Seattle. "But once you understand the model, it's not bad." Schauer added that OLE 2.0 did have one advantage for developers just learning to work with it: It allows you to build in a block-like manner. "You don't blow your work as you go," he said, explaining that a developer can start with a basic OLE 2.0 application and add more features without having to start over.

Stuart Wyatt, chief executive officer at Chrisalan Designs, Inc. in Wenatchee, Wash., agreed and added that OLE 2.0 also handles "passive responses" very well. In other words, if a developer chooses not to implement a certain OLE 2.0 feature, the system will know how to handle the situation — something very different from first learning to program for Windows, where forgetting one piece could collapse the whole application.

Developers indicated that writing applications that take advantage of OLE 2.0's Automation capa-

bilities, which allow one application to take advantage of another's functionality transparent to the user, would be one of the easier features to begin with. Indeed, Microsoft is due to ship Visual Basic 3.0 next month as the "glue" that will connect OLE 2.0 applications.

"Visual editing"

But the first noticeable impact of OLE 2.0 will probably be with Visual Editing, where users activate an object by double-clicking on it. Once activated, only the menu structure of the "container" application will change instead of an entire second application having to load a new interface.

At least one analyst questioned how important Visual Editing will be, however. "Who do you know who's dying to use compound documents?" asked Jesse Berst, publisher of "Windows Watcher," a newsletter in Redmond, Wash. Berst said that COM, with its ability to modularize applications for use by other programs, and the programmability provided by OLE 2.0 Automation had far more exciting implications than in-place editing of compound documents.

But even with the possibilities of OLE 2.0, Berst said, it will take the next step — distributed OLE, Microsoft's "Cairo" operating system — to take full advantage of the functionality.

OLE in its current form supports only communications within a machine, which limits its capabilities for applications such as collaborative document creation. Cairo, due in 1994, according to Microsoft, will allow for object communications across enterprise networks. "It really takes off when you can distribute it," Berst said.

The OLE automation feature of OLE 2.0 will allow applications to communicate with one another in a variety of ways. One way that Microsoft hopes will be the most pervasive is through the soon-to-be released Visual Basic 3.0. Microsoft is touting the upgraded Visual Basic as the "glue" that will connect OLE 2.0 applications. However, it may be several months before those applications begin to appear in any number.

Videoconferencing viability on way

By Michael Vizard

The integration of real-time videoconferencing with desktop applications looks like it will become a reality in 1993 through the efforts of established players such as PictureTel Corp. and several start-up companies.

During LotusWorld earlier this month, PictureTel demonstrated a prototype of its conferencing software running under Lotus Development Corp.'s Notes groupware offering (see story page 58).

The demonstration of the PictureTel software for Notes, which

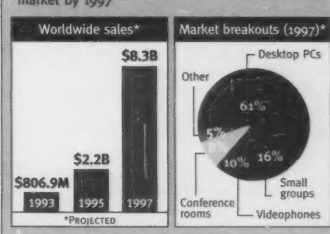
is still early in its beta-testing cycle, consisted of a live teleconference between Boston and an IBM office in Paris over a phone line that complies with the H.261 CCITT international standard for videoconferencing.

However, Picture-

Video, page 40

Deskward bound

PC-based videoconferencing should dominate the market by 1997



Source: Personal Technology Research Group

Vendors support faster EISA

Compaq, AST among those backing EMB extension for data transfer

By Stephen P. Klett Jr.

A coalition of hardware vendors, including Compaq Computer Corp., AST Research, Inc. and Intel Corp., recently announced support for an extension to the Extended Industry Standard Architecture (EISA) bus aimed at dramatically increasing data transfer rates.

While the vendors acknowledged that there is minimal demand for the new bandwidth today, they expect user needs to grow tremendously as technologies such as multimedia mature.

The two-mode extension is called Enhanced Master Burst (EMB) and was designed to provide transfer rates of 66M or 133M byte/sec. for bus master expansion boards, according to BCPR Services, Inc. in Spring, Texas.

Mode one will double the EISA bus' current 33M byte/sec. transfer rate to 66M byte/sec., and mode two will widen the data path to 64 bits resulting in a 133M byte/sec. rate, BCPR said.

Mike Perez, vice president of product development at Compaq's Systems Division, called the EMB announcement a "road map of where EISA is going, leading over time to the quadrupling of current throughput rates."

Perez said EMB-ready systems will debut from Compaq within a year, but he declined to mention specific products.

Future demand

While Perez said users' current needs do not require this additional throughput — he estimated data and file server environments use 30% to 40% of their available bandwidth — he predicted this would change as communications and video-intensive applications catch on and begin to push EISA's limits.

"As acceptance of industry-standard systems goes up for roles other than plain servers and moves into functionality of routers, bridges and gateways, EMB's acceptance will increase," Perez said.

Analysts agreed, saying EMB would take off when multimedia applications begin to arrive in force, but they added that cost was a major hurdle in EMB's acceptance.

"Users are clamoring for [increased throughput] in the area of video applications," said Ted Julian, an analyst for International Data Corp.'s (IDC) PC hardware program.

Indeed, for some users, the need for increased throughput has arrived.

"I/O width is a big issue for us," said Bill Lodge, project manager at Turner Corp., a construction management firm in New York that uses servers from Dell Computer Corp. and Compaq. Lodge said EISA with EMB is appealing because Turner has been looking for ways to in-

crease throughput levels due to increases in the use of Microsoft Corp.'s Windows and electronic-mail applications.

"We'd like to see [improved bandwidth] on a server," Lodge said. "It just makes sense with Pentium coming out. It's definitely something we'd look at and use — depending on cost considerations."

Data road map

1992 U.S. unit shipments, according to IDC:

EISA: 16-bit, 8.3M byte/sec. transfer rate; 758,000 units.

XT/AT bus: 32-bit, 33M byte/sec. transfer rate; 6.8 million units.

Micro Channel Architecture: 32-bit, 66M byte/sec. transfer rate; 961,000 units.

Working both ways

According to BCPR, XT/AT bus and EISA expansion boards will operate in EMB systems and vice versa. EMB specifications from BCPR are available to developers for \$200.

Other firms announcing support for the EMB extension include the following: Adaptec, Corollary, Inc., Distributed Processing Technology, Hewlett-Packard Co., NEC Technologies, Inc., IngC. Olivetti & Co. and Wyse Technology, Inc.

Several software firms, including Microsoft, Novell, Inc. and The Santa Cruz Operation, also announced support.

HELP LINE



Part of an occasional series of columns aimed at providing users with answers to technical questions. This week's questions and answers are provided by Corporate Software, Inc. in Canton, Mass.

Microsoft Corp.'s Access 1.0 database software

Q. How would I include a field with blanks in it as part of a query?

A. You must specify that you want to show records with blanks. First, specify the criteria and then add "or is null." For example, to specify that the query should include only those records for which the state is not "MA" or a blank, the criteria would be as follows: <"MA" or is null.

Q. I installed Microsoft Access onto my hard drive, and I noticed there is an MS-SETUP.T directory there. What is this? Do I need it?

A. This MS-SETUP.T directory remains on the hard drive when you choose to reboot your system after completing setup. You can safely delete this directory and all the files in it. If you return to Windows after setup instead of rebooting, Access removes this directory itself.

Q. I've gone into my Access database and changed some permissions. Now I find that I am having trouble accessing and changing objects.

A. Adding security information after the objects have been created can sometimes cause unusual and unwanted results. You should set up your users, groups and permissions when you begin designing your Access database.

If you do have problems after changing permissions, highlight the object in the Object window, choose Edit/Copy and then Edit/Paste.

Access will prompt you for a new name. Your security arrangements should work properly with the new object. You can then delete the old object.

Borland International, Inc.'s Paradox for Windows 1.0 database software

Q. Is it possible to use a Paradox for DOS Paradox Application Language (PAL) script in Paradox for Windows?

A. Paradox for Windows does not provide a conversion path for Paradox for DOS PAL scripts. You can, however, create an icon for your Paradox for DOS scripts and launch them from Paradox for Windows.

First, use the Windows File Manager to associate the .SC extension with your Paradox for DOS .PIF file. Next, open a folder from your Paradox for Windows desktop. Add the script to the folder by choosing Folder/Add Item or clicking on the Add Item icon on the Speedbar.

Choose the proper path, and for File Type, choose <Files>. Click on OK, and the file will appear as an icon in your folder. You can then double-click on the icon to launch Paradox for DOS and your application.

When you exit your application, you will return to Paradox for Windows. Your Paradox for DOS program directory must be in your path for this to work properly.

DEC prepares for NT application deluge

More than 250 apps to be ported to Alpha on NT

By Melinda-Carol Ballou

Digital Equipment Corp.'s progress on the applications front for Windows NT will be demonstrated at Windows World next week.

DEC will announce the release of more than 250 applications that have been ported or are in the process of being ported to NT on Alpha by the end of next month, and DEC officials will demonstrate Insignia Solutions, Inc.'s SoftPC emulation software running on Alpha and tools for producing binary executable images of Alpha code from Intel Corp. source code.

Sources said the company is negotiating with major suppliers of compilers, such as Borland International, Inc., Zortec, Inc. and Watcom, to add support for NT running on Alpha AXP platforms.

While DEC refused to confirm details, it said that it was "in negotiation," and DEC's group manager for NT, Jeff Schriesheim, noted, "Today, in order to be a chip supplier, you also need to be a compiler technology supplier — the two are tremendously intertwined."

Missed in March

Microsoft Corp. did not ship SoftPC emulation for DEC's Alpha-based NT platforms in the March beta-test release of

Windows NT because the product was only recently released outside of Insignia for evaluation.

SoftPC will provide 16-bit emulation for Intel, Mips Technologies, Inc. and Alpha-based systems; product support for the three architectures is being coordinated, according to Schriesheim.

"We're still working through the remaining issues — there are significant changes going on to the NT system. There are pieces being done which are architecture specific and pieces which are shared across Intel, Mips and Alpha, which need to be resolved," he said.

The early performance measurements for PC emulation are causing a little concern, he said, but in general, the product looks "quite good."

DEC has already done "significant work as to put software onto OpenVMS and OSF/1, so some shakeout has occurred for the software on Alpha," Schriesheim said. "The real performance benefits will obviously only come from native applications, yet the reality is there are thousands of [16-bit] applications that run on Windows. Microsoft's efforts to bring in the 32-bit [application programming interfaces] to other platforms will greatly help [the development of 32-bit applications]," he added.

SoftPC will provide 16-bit emulation for Intel, Mips and Alpha-based systems, and product support for the three architectures is being coordinated.

Nice

Try.

DOS 6.0 unleashes compression tizzy

DoubleSpace utility unsettles users as well as compression market

By Michael Fitzgerald

■ The rise of "fatware" led to Microsoft Corp.'s decision to put the DoubleSpace compression utility into DOS 6.0, and that in turn has created a serial melodrama: Users have found themselves somewhat uncertain about the skinny on compression utilities.

The much-publicized legal spat between Microsoft and Stac Electronics, Inc., which makes the Stacker compression utility, has had little impact on new product releases. But Microsoft subsequently revealed that its coming Windows NT operating system will not recognize compressed files.

Current users of compression software have found that it is difficult to convert files from one compression form factor to another.

"I'm a little confused [in part] because IBM is going to be coming out with IBM DOS 6.0, and there was some discussion that they're going to put their own compression software in there," said Richard E. Nelson Jr., vice president of agency systems at New York Life Insurance Co.

For now, Nelson said, New York Life is testing DOS 6.0 because it would "like to be able to save on the expense" of buying Stacker for its new PCs. At the same time, he said that New York Life will not do a mass upgrade to DOS 6.0 and will continue to support its raft of current Stacker users.



Making room

Compression software such as Stacker or SuperStor is aptly named; it lets users stuff files down into a smaller space, creating more room on hard disks. While most vendors bill their products as doubling the space available on the hard drive, users report that they generally get between 1.5 and 1.8 times more room on their hard disk after they have compressed files.

There is also widespread speculation that Microsoft's decision to include the DoubleSpace utility in DOS 6.0 means third-party compression vendors will go out of business. "I think it kills all the compression utility makers," said Andrew Seybold, editor of the newsletter "Outlook on Professional Computing."

Some compression vendors agreed. AddStor, Inc., which makes the SuperStor Pro compression package, introduced DoubleTools, which was designed to give users a better way to manage compressed disks. Unlike Stac, which is trying to out-feature Microsoft, AddStor positioned DoubleTools as a DoubleSpace extension, not as a competing compression tool.

Still, many users expressed loyalty to their current compression software vendor.

"We don't have any plans to implement DOS 6.0 at this point because we have [Stacker] in place, and we see [compression] as the major reason to buy the upgrade," said Greg Feeler, information systems manager at Employer's Resource, Inc. in Boise, Idaho.

There may be some practical reasons to avoid switching. Dan Ness Jr., an analyst at Computer Intelligence in La Jolla, Calif., said, "When you've got something compressed under one format and you need to decompress and recompress it in another format, it's a pain." Ness cited a letter Microsoft sent customers informing them that reconfiguring a hard disk from Stacker to DoubleSpace could take six to seven hours on a 486-based system.

For the current 4 million compression users, DoubleSpace may be a nuisance they are stuck with. Even Seybold said Microsoft should have made it easier to deinstall DoubleSpace.

Charlie Russel, computer-integrated monitoring system administrator at New United Motors Manufacturing, Inc., the Fremont, Calif.-based joint venture between Toyota Motor Corp. and General Motors Corp., is using Stacker and DOS 6.0 in his environment. He said he would like to deinstall DoubleSpace on his new machines because "I have a long history with Stacker, and I trust it."

NT left out — sort of

The revelation that Windows NT will not recognize any compressed files came in the weeks after the release of DOS 6.0. Brad Chase, general manager of MS-DOS at Microsoft, said this would affect only users who wanted to use DOS 6.0 and NT on the same PC, and that a future version of NT would work with DoubleSpace.

For now, "the piece of advice Microsoft would give to users is not to use DoubleSpace if you want to use NT and MS-DOS 6.0 on the same PC, unless you have no need to use those files under NT," Chase said. He added that Microsoft built a number of operating system hooks into DOS 6.0 to allow users to be able to install other vendors' compression software.

The long-standing issue of whether compression software is reliable has some users avoiding compression software altogether.

Steven Adas, director of MIS at States Nite-ware, Inc. in New Bedford, Mass., said he has no plans to use DoubleSpace after having previous problems with Stacker. "If I need space, I just zip the file," he said.

Videoconferencing viability

CONTINUED FROM PAGE 37

Tel, which dominates high-end teleconferencing applications, is not the first company to integrate videoconferencing with desktop applications over standard international phone lines.

DeskVision, Inc. in Peabody, Mass., currently offers a CCITT-compliant videoconferencing system that takes CCITT signals and packetizes them for distribution across Novell, Inc.'s NetWare, Banyan Systems, Inc.'s Vines, Digital Equipment Corp.'s Pathworks and Integrated Services Digital Networks, according to company President Phil Taylor.

The package includes a video camera and related PC hardware and sells for about \$10,000.

However, in order to promote the adoption of teleconferencing, some vendors are offering less expensive proprietary solutions that are incompatible with the CCITT standard.

For example, ViewPoint Systems, Inc. in Dallas will demonstrate its Personal ViewPoint for Windows at Windows World in Atlanta later this month. Priced at \$1,995, which includes software and a video camera, the ViewPoint offering transmits video images at

30 frames per second over a Transmission Control Protocol/Internet Protocol link, which is the same speed as the DeskVision product.

However, because the ViewPoint system does not support CCITT, users cannot integrate it with other teleconferencing packages such as PictureTel's offering. To solve this, ViewPoint executives said they will provide protocol converters sometime next year.

Taylor said he plans to provide a \$2,000 software-only CCITT offering by year's end.

In general, the performance of these products is determined by the amount of network bandwidth and hardware processor horsepower available. "Basically, the quality of these images is going to be dictated by the speed and horsepower you throw at it. If you're going to run this stuff over Ethernet alongside other applications, you better have one hell of a compression algorithm," said David Moore, senior vice president at Mellon Bank Corp. in Pittsburgh.

"If you keep your expectation low, products like the ViewPoint software are reasonably good. If you expect fluid motion, however, you'll be disappointed," said Say-

eed Rashid, an engineer at NEC America, Inc. in Dallas.

NEC recently demonstrated the ViewPoint software running in conjunction with its Asynchronous Transfer Mode (ATM) router offerings alongside a \$9,000 package for Unix systems created by InSoft, Inc. in Mechanicsburg, Pa. According to Rashid, the more expensive InSoft software provided more fluid motion running on a dedicated card attached to a Sun Microsystems, Inc. workstation.

Moore said he will likely start evaluating desktop teleconferencing software when he finds an application requiring it. He said he sees a need for creating desktop conferencing across multiple cities, but as yet these technologies are all point-to-point solutions. Multipoint solutions are expected to be available later this year.

"These applications are sensitive to the amount of bandwidth available. We see this market taking off when the new network architectures like ATM are in place. We're very encouraged that Novell is working with AT&T in this area," said Sarah Dickenson, program director for visual telecommunications at Personal Technology, Inc., a market research firm in Waltham, Mass.

"In the future, we see this as becoming a very valuable technology," Moore added.



Application packages

Landmark Research International Corp. has introduced Speed Test for Windows.

The product is a Microsoft Corp. Windows-based software program designed to give accurate measurements of a system's CPU, floating point unit and video performance.

Speed Test for Windows measures system performance as if various application software programs such as AutoCAD or Microsoft's Excel were running. This version has added a data capture feature that saves all test results to an internal database, the company said.

The product costs \$49.

► **Landmark Research International**
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Utilities

TouchStone Software Corp. has introduced CheckIt PRO: Tests & Tools.

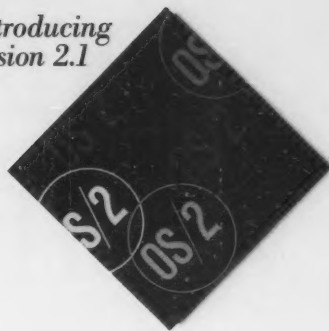
The company said CheckIt PRO: Tests & Tools is a flexible, troubleshooting diagnostic utility that tests PC hardware, providing explicit interpretation of results to identify faulty components. An assortment of diagnostic suites can be constructed by using TouchStone's custom test applets.

The product offers the ability to test PC hardware such as controllers, drives, input devices, memory, motherboard, peripheral devices, video components and more.

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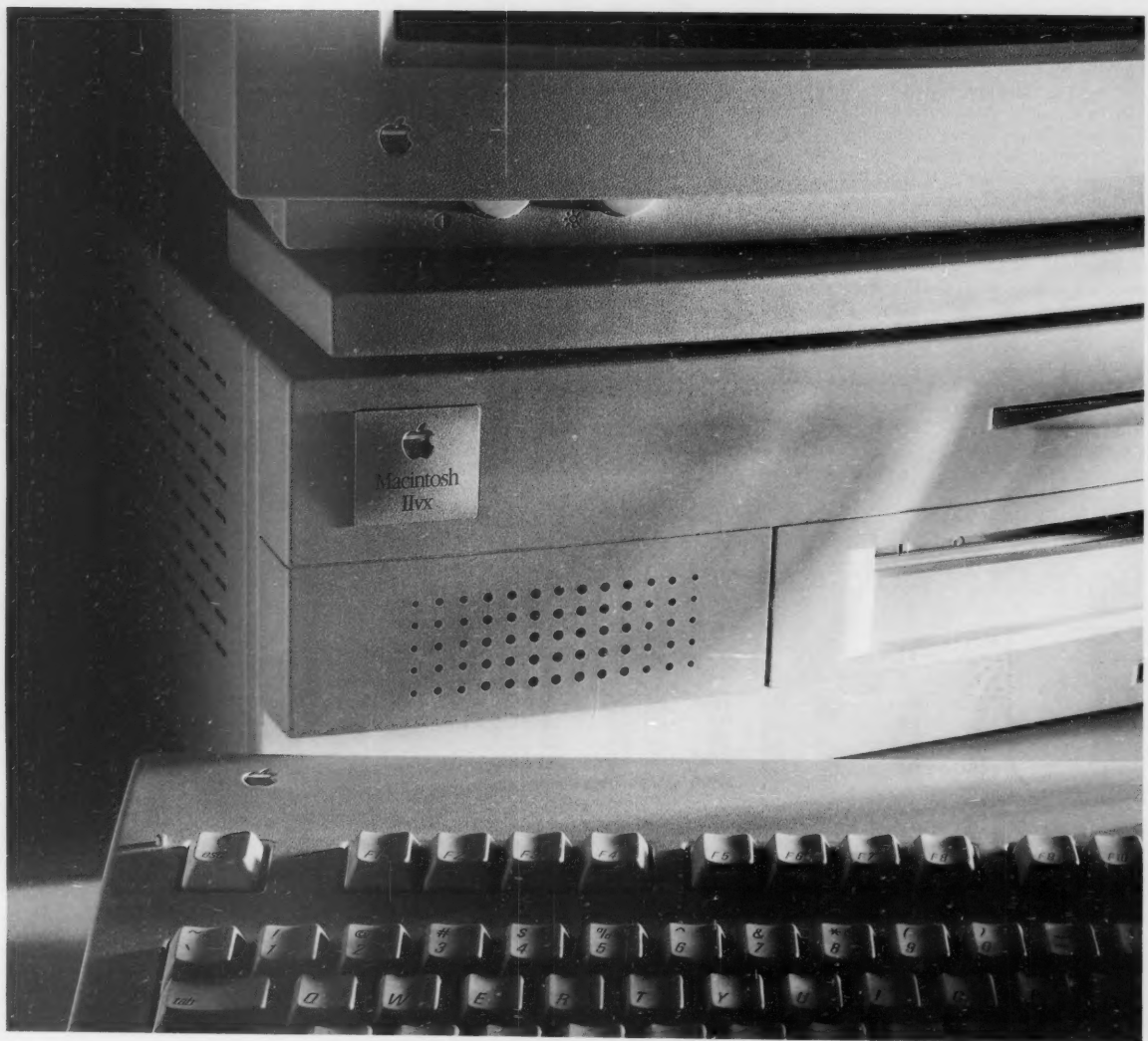


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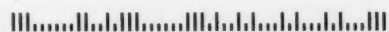


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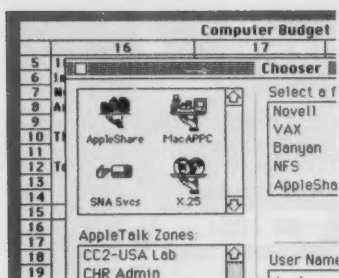
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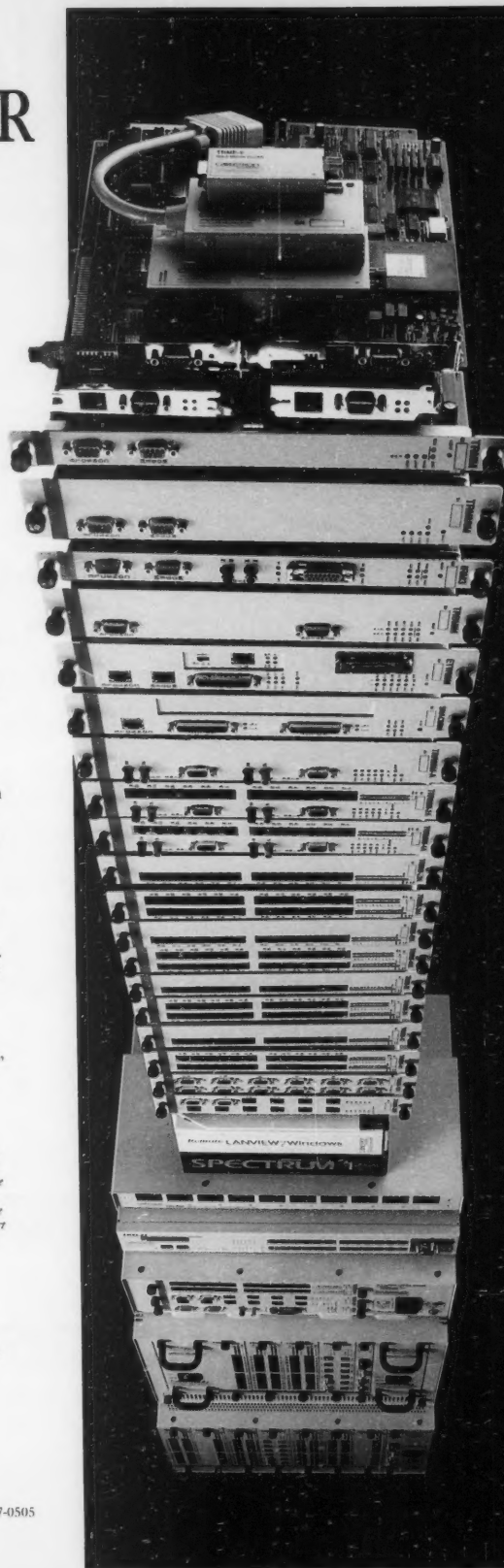
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Keys to successful LAN management

By Michele Dostert

MANAGING LOCAL-AREA NETWORKS involves more than measuring network packets running across a cable. Good network managers strive to make their networks reliable, responsive and as user-friendly as possible.

The first key to doing this, according to those in the trenches, is having all the network information at your fingertips. "Many LANs grew up so quickly that no one had the time to document them," said Kris Gronert, a senior LAN analyst at the Quaker Oats Co. in Chicago. "If you don't know exactly what's on your network, you can't manage it; all you can do is fight fires."

The second key to successful network management is being proactive — identifying and correcting incipient problems before the network crashes.

In the last two years, efficient network management has become easier, users said, as vendors have released a spate of new products designed to help them compile information about their networks and head off small problems before they become big ones.

Whether the LAN has five users or 500, is managed locally or from a remote central location, is state of the art or a 10-year-old legacy, the person or persons responsible for it must manage the same three basic areas: the user desktop, the network server and the physical cabling connecting the two.

Managing the desktop

The first step to managing the user desktop, network managers said, is finding out exactly what is on it. A simple table of users and their network addresses is not enough.

Ideally, a user database should display both hardware and software information, including brand of PC, type of processor, amount of random-access memory, type of network card, version of network drivers, capacity of hard disk, applications stored on hard disk, BIOS version, client operating system and version and the network shell version.

If such a desktop database does not already exist, several products can autodiscover some or all of the information for you, including the LANdesk Manager from Intel Corp. in Santa Clara, Calif.; Saber LAN Workstation from Saber Software Corp. in Dallas; NetCensus from Talley Systems Corp. in Hanover, N.H.; Network H.Q. from Magee Enterprises in Norcross, Ga.; and LANExam from Network Computing, Inc. in Dallas.

Secondly, tracking the physical location of users can save a lot of time. In some organizations, users seem to move every quarter; a physical map can save hours of wandering around cubicles looking for John Doe's PC and its faulty network card.

Thirdly, upgrade everything at once. If some users run DOS 5.0 and some DOS 6.0, some run Windows 3.0 and some Windows 3.1, and some run one version of the network client software

and others run another, troubleshooting user problems becomes a major headache.

Network-based software distribution packages, such as the Software Update and Distribution System from Frye Computer Systems, Inc. in Boston, let managers upgrade all user desktops with a few keystrokes, instead of having to carry disks around.

Managing the server

Although network servers have necessarily been more tightly controlled than user desktops, a complete inventory for each server is a necessary network management tool.

Server inventories should include the same hardware, software and configuration information as desktops, as well as network operating system configuration and listings of attached devices, such as printers, modems, CD-ROM players, optical jukeboxes, tape drives and device driver information.

"If your network backup failed, you'll save a lot of time if you have all the information about the device itself, the device driver, the network operating system and the backup system in front of you before you start calling for support," said Ron Rosen, manager of LAN support and planning at American Express Co.'s corporate headquarters in New York.

Secondly, in order to plan for network capacity increases, managers must be able to track server use historically. Server management products such as XTree Tools for Networks from XTree Co. in San Luis Obispo, Calif.; Frye's Frye Utilities for Networks; and LAN Server Watch from Brightwork Development, Inc. in Tinton Falls, N.J., can take "snapshots" of server processor use during the course of an hour, day or week and graph the information.

Some of these products can identify server use by user, enabling managers to identify, and possibly move to another server, power users who eat up network resources. "Two or three database users could be eating your server alive, and moving them to their own server will greatly boost your entire network performance," said Craig Anderson, information systems director at Lutheran Brotherhood Insurance

Corp. in Minneapolis. "But you won't know that unless you have a history of server usage."

Most important, users say, network managers who install server monitoring packages can be automatically alerted when server use and performance statistics exceed or fall below user-definable parameters.

"Having our server monitors set up to page us when parameters are exceeded lets us fix the server before it crashes and takes down our mission-critical applications," said Wayne Robertson, network supervisor at St. Agnes Medical Center in Fresno, Calif.

Managing the network

According to network managers, the key to managing the physical network cable, whether it is coaxial, twisted pair or the latest in fiber optic, is, once again, information. An up-to-date plant wiring diagram that includes the location of hubs, repeaters, wiring closets and network terminations can eliminate lots of crawling around on the floor with a cable tester.

"Don't trust your memory and don't trust the map drawn by the guy before you," said Jim Queen, network manager at Enron Gas Services in Houston. "You can't fix a break in a cable you can't find; so start from your server or backbone and trace everything down."

Configurable, proactive monitoring of network cable via the use of manageable hubs, made by companies such as Synoptics Communications, Inc., Cabletron Systems, Inc., 3Com Corp. and many others, can greatly simplify network management. These hubs contain management software that can pass status and traffic information up to either vendor-specific management stations, network-specific management programs such as Novell, Inc.'s Network Management Service or Simple Network Management Protocol-based systems such as OpenView from Hewlett-Packard Co. or SunNet Manager from Sun Microsystems, Inc.

Most network management programs can provide a history of cable traffic compiled from a series of scheduled "snapshots," which can be invaluable tools for identifying bandwidth bottlenecks caused by mass simultaneous logins, bad network cards and the like.

Integration: The missing element

Network managers said they are pleased by all of the newly released network management tools but would be much happier if their new tools could work together.

For example, it would be useful if desktop inventory, cable monitoring and server monitoring packages could run on the same terminal and share information. This would allow a network manager who has identified a bad network card via a cable monitoring package to instantly pull up, on the same terminal, the card information

from his desktop inventory.

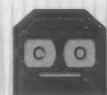
"Currently, we have four different monitoring and management packages running on four different terminals, and none of them can share information," said Wayne Robertson, network administrator at St. Agnes Medical Center in Fresno, Calif. "If someone would come up with a single package to manage and monitor the cable, desktop, server, operating systems and applications, I'd buy it tomorrow."

—Michele Dostert



Managing desktop PCs:

- Inventory of hardware and configuration.
- Inventory of all software.
- Logical map including network address.
- Physical map overlaid on office floor plan.



Managing servers:

- Up-to-date hardware configuration information.
- Up-to-date software configuration information.
- Resources inventory.
- Configurable, proactive performance monitoring.



Managing networks:

- Configurable, proactive capacity monitoring.
- "History" monitoring to identify peak use.
- User monitoring to identify source of network traffic.

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Workgroup Computing

Electronic publishing

Pharmaceutical industry automates drug approval

By Michael Vizard

As players in one of the most regulated industries in the world, pharmaceutical companies have always faced numerous bureaucratic challenges when applying to the Food and Drug Administration (FDA) for approval of a new drug.

And while most people might think this process has become highly automated, the fact remains that the preponderance of new-drug applications to the FDA are still filed and reviewed on paper.

"Over the last 10 years, we've only had about 85 computer-aided new-drug applications," said Gary Green, director of strategic system planning at the FDA.

But in the last several months, pharmaceutical companies have been enhancing their on-line filing capabilities in response to FDA calls for all new drug applications to be voluntarily filed by electronic methods by 1995.

Taking the lead

One of the first companies to comply was Mallinckrodt Medical, Inc. in St. Louis, which is using Worldview electronic document distribution software from Interleaf, Inc. in Waltham, Mass.

Mallinckrodt, which generates about \$800 million in revenue annually, is a supplier of isotopes for diagnostic procedures. The company used the Interleaf publishing system to create its proposal and then delivered workstations and Interleaf's viewing software to the FDA, which then reviewed the proposal on-line.

Mallinckrodt has to deliver systems to the FDA because the agency does not have the systems required to run document publishing software. As a result, each pharmaceutical company delivers its proposal on whatever system it uses internally, which requires FDA personnel to learn different computer systems for proposals from different companies.

Time is money

Despite the costs associated with providing the FDA with systems, Mallinckrodt officials said the expense is well worth the return on investment. It normally takes about 30 months for a new drug application filed on paper — anywhere from 10,000 to 1 million pages in length — to be approved by the FDA. "But the FDA studies show that electronic filing can reduce the approval time by 8.7 months, and when you're dealing with

products that have revenues of \$100 million a year, this is a significant savings," said Bill Woods, manager of project administration at Mallinckrodt.

Because the pharmaceutical industry is highly regulated, Woods said there is no compelling competitive drive to maximize earnings by investing in automation. However, this situation is likely to change as the Clinton administration focuses on lowering health care costs.

And while dealing with new drug applications on-line is a step above handling paper documents, Green said the FDA is in the early stages of developing a standard information system infrastructure. Under the auspices of a recently started Submission and Review Tracking (SMART) initiative, Green said the FDA will define a set of electronic data interchange formats as part of the SMART initiative to revamp the FDA information system architecture during the next seven years.

"The FDA has a task force in place, but no formats have been defined," noted Mark Walter, a senior editor of Johnathan Seybold's *Report on Desktop Publishing* in Media, Pa.

"The FDA wants a tougher standard where they can be the information gatekeeper using an information standard," said Michael Hawotte, a vice president at Computer Sciences Corp., a consulting firm in El Segundo, Calif.

Woods added that electronic filings also enhance the thoroughness of the review because reviewers can annotate the documents and use hyperlinks to navigate through portions of a filing.

Neck and neck

Interleaf, along with Frame Technology Corp. in San Jose, Calif., and Xyvision, Inc. in Wakefield, Mass., are the leading providers of electronic document systems vying for pharmaceutical contracts.

Another taker

Following Mallinckrodt's lead is F. Hoffman-LaRoche AG, which is one of the Top 5 pharmaceutical companies in the world.

"We anticipate that filing electronically with the FDA and European agencies will reduce the time it takes for approval by allowing us to respond to regulatory queries faster," said Garth Ow-

ens, international Interleaf coordinator at Hoffman-LaRoche in Welwyn Garden City, UK.

Unfortunately for the pharmaceutical companies, however, it is unlikely that worldwide agencies that approve drugs will ever standardize on the same format, Walter said. As a result, international pharmaceutical companies will probably have to maintain multiple electronic document formats, he noted.



Mallinckrodt's Bill Woods: Electronic filing can cut approval time by 8.7 months

Bank sets financial records straight

Client/server move to support firm's asset boom

By Gary H. Anthes
APPLETON, WIS.

■ Valley Bancorp, a \$4.5 billion bank holding company, is surely among the few large financial institutions never to have used a mainframe for financial reporting.

Over the years, the bank progressed from paper and pencil to minicomputers to stand-alone PCs to a client/server solution. A close encounter of a brief kind with the company's big iron flopped and was recently scrapped.

As part of an expansion from 96 to 153 banking offices in 1991 and 1992, Valley Bancorp converted its mission-critical systems from NCR Corp. mainframes to IBM mainframes. It replaced a system for internal reporting, which ran on Digital Equipment Corp. MicroVAXes, with general ledger and financial reporting packages from the former Management Science America, Inc.

The bank had hoped that accounting, financial and tax personnel would be able to use the mainframe report writers and get same- or next-day response to their information needs. But it was not to be, said Dave Stoehr, financial reporting officer.

"We had planned on a very responsive environment, [but] the report writers weren't that flexible. If we wanted to make a change to something, we were talking two to three weeks," Stoehr said.

Sinking ship

Stoehr said the bank's efforts to port its mission-critical systems for loan and deposit processing to the IBM environment stood in the way of his getting the kind of support he wanted for the less critical reporting functions.

"I saw us sinking real deep on the priority list," he said.

Stoehr scrapped plans to move external reporting, which had been running on stand-alone PCs using Lotus Development Corp.'s 1-2-3, to the glass house. Instead,

he selected Comshare, Inc. in Ann Arbor, Mich., to install its Commander FDC product for financial consolidation and reporting on an IBM Personal System/2 server in a local-area network. After 15 months of unsuccessful parallel operations, internal reporting was also moved to the LAN, using Comshare's One-Up product for modeling and reporting.

The moves to client/server took less than six weeks, Stoehr said.

Speedy delivery

Now, the mainframe-based general ledger system is relegated to a "debit/credit collection device," Stoehr said.

It sends detailed account data at the end of each month to the LAN server, and reports are out in two to four business days — more than a week sooner than had been the case with the old minicomputer and stand-alone PC systems.

And the bank's end users are able to initiate their own canned reports as well as produce ad hoc reports.

For example, Stoehr said, a tax accountant can produce a custom report showing planned vs. actual expenses for a specified period in about 10 minutes.

Stoehr said it is difficult to quantify cost savings associated with the new client/server approach. However, he said it would allow the bank to grow from \$3 billion in assets to \$6 billion without having to add to the financial reporting staff.

Less staff

With the old systems, the bank faced steady staff increases as the pace of business increased, he said.

Stoehr said banks are increasingly moving from custom mainframe systems to off-the-shelf LAN solutions.

"They have frustrated groups of accounting and finance people who are sick and tired of waiting a week to get a report. For a reasonable price, they can control that," he said.

Stoehr said the bank considered outsourcing but decided against it. "We wanted to remain ... an independent banking holding company," he said.

ON SITE

Valley
Bancorp
Appleton, Wis.

Challenge: To give non-technical end users rapid and flexible access to financial data.

Technology: Client/server environment gets accounting data from mainframe and offers it to users via financial reporting software from Comshare, Inc.

Results: Users can produce own reports in minutes; bank has avoided hiring new staff.



"I saw us sinking real deep on the priority list."

—Dave Stoehr,
Valley Bancorp



Mainframes and networks can share data without an expensive go-between.

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Bus-Tech also offers high speed controllers for channel attachment of existing SAA servers, and host based TCP/IP connectivity solutions.

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Workgroup Computing

Symbus changes image of scanned-in forms

By Michael Vizard
WALTHAM, MASS.

Symbus Technology, Inc. has unveiled an imaging system that automates the process by which data is transferred from paper forms to standard ASCII format.

Based on neural network technology running on a PC server, Inscript differs from other imaging solutions in that the form is stored as an ASCII text file and thus takes up considerably less storage space than a form stored as an image. If required, the ASCII files can also include pointers that will link them to the original form stored on an optical disc system.

This solution was designed primarily for applications where maintaining an exact record of the form in electronic format is not required. For example, Consolidated Edison Co. of New York, Inc. has adopted Inscript running on 50-MHz Intel Corp. i486 systems to automate the processing of data collected by its field workers.

A home in the Big Apple

Con Edison has 11 sites in the New York area using Inscript to process forms including time sheets, expense reports and work action items, said Tom McCormack,

manager of the productivity systems group.

Each of these sites processes about 100 forms a day, and McCormack estimated that Inscript has reduced the time spent rekeying these forms into Con Edison systems by 75% to 80%. The time savings helped Con Edison eliminate and re-deploy a number of employees as part of an overall downsizing effort at Con Edison, McCormack said.

"We finished the pilot project last September, and we expect to have 23 sites up by the end of the year," he said.

Prior to adopting Inscript, McCormack said, Con Edison experimented with giving its field-workers handheld devices and laptop computers, but this solution proved impractical from a cost perspective.

"Surprisingly, they did better with the laptops than the handheld devices, but the laptops cost \$5,000 and got abused in the field or stolen. So we decided to go back to paper," he said.

According to Martin Greif, Symbus' vice president of marketing, Inscript packaged on a 50-MHz PC with an optical character recognition scanner will cost customers about \$20,000.

"We figure that the payback for this will take about a year," McCormack said.

Mistaken identity

Con Edison recently experienced a tragedy when one of its field workers was killed during a robbery. The killers apparently mistook the employee's handheld computer for a valuable consumer electronic device, according to Con Edison's Tom McCormack.

Electronic distribution to take Swift route to users

By Michael Vizard
PROVIDENCE, R.I.

After nearly two years of development, the Society for World-wide Interbank Financial Telecommunications (Swift) plans to go live with an electronic delivery system for manuals that teach network managers how to maintain and monitor their Swift networks.

By adopting the Dynatext electronic publishing system from Electronic Book Technologies, Inc., Swift plans to deliver six manuals in an electronic format starting this September.

Those manuals will be created by taking documents currently created in Interleaf, Inc. publishing systems and Digital Equipment Corp. DECwrite word processors and stored in a standardized general markup language format (SGML), according to Deb Mukhaerje, a project engineer at Swift.

Because the documents are stored in an SGML format, an International Standards Organization standard, Swift can then import those documents into Dynatext for electronic distribution in an

SGML format.

Swift, which is a nonprofit company based in Brussels, maintains an international network dedicated to transferring bank funds. It plans to be able to deliver up to 20 manuals electronically within a year of going live.

Communicating to users

According to Mukhaerje, the Dynatext software will make it easier for Swift to provide documentation on new features in the network. Currently, Swift must distribute new hard-copy manuals for each update.

In addition, network managers in Brussels will be able to concurrently view documentation when trouble arises on the network.

Dynatext, which is available for Microsoft Corp.'s Windows, is priced at \$1,000 for each title created using Dynatext. Dynatext read-only software is free, but a full version of the reader software that supports annotation of documents is priced at \$350. Apple Computer, Inc. Macintosh support will be available in July, the company said.

Workgroup Computing

New Products

Workgroup software applications

Pacer Software, Inc. has released Version 2.0 of PacerForum, a project collaboration and communication application for networked Apple Computer, Inc. Macintosh users.

According to the company, PacerForum is a client/server product that employs a flexible button board structure to give workgroups a means for distributing and sharing documents and information.

A variety of features have been included, such as improved remote access performance for mobile computer users and personal folders with bulletin boards that permit users to customize the organization and presentation of information.

A five-user pack costs \$549; a 25-user pack costs \$1,995.

► **Pacer Software**
Suite 402
7911 Herschel Ave.
La Jolla, Calif. 92037
(619) 454-0665

Insignia Solutions, Inc. and Hewlett-Packard Co. have announced SoftPC 3.1 with Windows for HP 9000 Precision Architecture-RISC and Motorola, Inc.-based workstations.

According to the company, the product allows HP users to run MS-DOS and Microsoft Corp.'s Windows applications on their workstations.

The functionality of a 286 PC is emulated at up to 486 speeds, and support is provided for real and protected mode, enabling PC applications that need more than 640K bytes of conventional PC memory to run.

Windows 3.1 and MS-DOS 5.0 come pre-installed, allowing personal productivity applications, including Microsoft's Word and Borland International, Inc.'s Quattro Pro to be used.

SoftPC 3.1 costs \$549.
► **Insignia Solutions**
526 Clyde Ave.
Mountain View, Calif. 94043
(415) 694-7600

LAN software

Verdix Corp.'s Secure Products Division has announced VSLAN III.

According to the company, the product was designed for users who need security on networks with PCs, minicomputers and workstations that process sensitive or proprietary information.

The product supports a variety of Apple Computer, Inc., Digital Equipment Corp., IBM and other PCs, minicomputers and workstations that already support VSLAN and VSLAN II. VSLAN III is available in Token Ring and Ethernet implementations.

The product is priced at \$799 per node.

► **Verdix**
205 Van Buren St.
Herndon, Va. 22070
(703) 318-5800

Unix

Network Security Systems, Inc. has introduced LanSafe II for Unix, a power management software package.

The product incorporates an X Window System and the Open Software Foundation's Motif graphical user interface (GUI) and was designed to manage and control power in a heterogeneous network environment.

Users can configure, manage and monitor every power protection node from both local and remote workstations, the company reported.

Features such as total power management on every network device, real-time configuration and automatic and orderly shutdown of all network devices are included.

Support for the X Window and Motif GUIs is provided, and a "PowerPro" feature is offered for setting upper and lower voltage limits.

A single-seat version of LanSafe II for Unix costs \$149.

► **Network Security Systems**
9401 Waples St.
San Diego, Calif. 92121
(619) 587-7950

Bristol Technology, Inc. has introduced HyperHelp 3.0, an on-line Unix Help product.

Key enhancements to HyperHelp 3.0 include character-based HyperHelp, a component that enables users to construct on-line, context-sensitive Help for Unix character terminals, and History, a feature that permits users to retrace their path through a Help session, the company reported.

Secondary windows, segmented bitmaps and support for Microsoft Corp.'s Windows 3.1 Help are also provided.

Additional capabilities such as improved memory management, a midtopic jump capability, a partial key word-searching capability and improved performance are also offered, according to the company.

HyperHelp 3.0 costs \$5,000.
► **Bristol Technology**
241 Ethan Allen Highway
Ridgefield, Conn. 06877
(203) 438-6969

XSoft, a division of Xerox Corp., has introduced Rooms for X Windows, a Unix-based version of its Rooms for Windows utility software.

According to the company, the product helps users arrange their work by using multiple desktops or rooms that are customized for specific projects or tasks with the applications and files the users need.

Unix-based graphical user interfaces, including Sun Microsystems, Inc.'s OpenLook and the Open Software Foundation's Motif in the X Window System environment, can be enhanced, organized and simplified.

Rooms for X Windows has a \$40 registration fee.

► **XSoft**
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tion between the two as easily as cutting and pasting between two Macintosh applications. Which means now everyone on your system can use the same X applications. Without anyone uttering a single word of confusion.

In fact, since MacX supports all X application tools, as well as OPEN LOOK and Motif GUIs, MacX helps you answer the question, "How do these Macintosh computers fit into my open systems environment?" Very well, thank you.

Call 1-800-554-5999, extension 210, now and we'll send you a free copy of our Technical Overview of MacX.* The power to bring Macintosh computers into your UNIX® environment.

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Coping with the deluge

Effective management key when nonstop E-mail hampers productivity

By Mitch Betts
WASHINGTON, D.C.

Electronic mail is a wonderful productivity tool, allowing users across the company and across the world to quickly share vital intelligence, memos, FYIs, research, queries, announcements and personal notes.

But some folks get too much of a good thing.

Consider Dick Adams, assistant director for fire operations at the U.S. Forest Service. He receives about 100 E-mail messages a day during the summer forest fire season. Some messages are really 20-page documents, some are mission-critical, and about one-third are useless, he said.

Adams is not alone. Many users are finding themselves mired in a state of E-mail overload, swamped with 100 to 200 messages a day waiting in their in-box, according to Ira Chaleff, a consultant on white-collar productivity.

Experts such as Chaleff warn that unless users learn to effectively manage their E-mail—through better work habits and E-mail filtering technologies—the productivity gains possible from electronic messaging will be lost.

All full

Chaleff, who is president of the Institute for Business Technology, Inc. in Washington, D.C., said he has come across a variety of E-mail problems in the course of working with overloaded users. For example, it is common to find "maxxed-out" in-boxes, which then lock up.

"We found one individual with 4,000 messages in his electronic in-box," Chaleff said. Some systems get so clogged with undeleted messages that information systems departments frantically beg users to clean out their old files.

"We have users here who are constantly getting blown off the system because of lack of disk space because they haven't kept up reading their E-mail," said Davis B. Conley, director of computer services at Hartwick College in Oneonta, N.Y.

The E-mail deluge threatens to get worse as companies begin to link multiple E-mail systems, explore wireless E-mail and tap into that vast web of electronic mailing lists known as the Internet.

E-mail, page 60



Don't be overloaded

Here are some tips for fighting E-mail overload from the Institute for Business Technology:

FOR SENDERS:

- Cover one topic per message, making it easy for recipients to file, forward, delete, store or answer.
- Use clear subject headers so the recipient can quickly gauge the message's importance.
- Do not overdistribute. Prepare distribution lists thoughtfully for different clusters of people.
- Post general-interest reports in a common file or electronic bulletin board.

FOR RECIPIENTS:

- Delete it now! Do not clog your in-box with messages you have read.
- Create electronic folders by topic for easy retrieval.
- Shut off the "beep" notification feature. Look in your in-box several times a day, but do not let the alarm interrupt you every few minutes.



PG&E relocates without pain

By Elisabeth Horwitt
SAN FRANCISCO

Pacific Gas & Electric Co. (PG&E) may have broken new ground in data center consolidation: It moved operations from San Francisco to its backup center 55 miles away with no downtime and only about four hours of interruption for major user applications.

Even better, PG&E accomplished the move without major impact on budgets for either networking or computing equipment, according to Chang Liu, senior network analyst at the Fairfield, Calif., facility, its former backup computer center.

About a year ago, PG&E's information systems staff began discussing consolidation as a way to increase reliability and decrease the overhead of maintaining and upgrading the data center. The San Francisco facility was not only subject to earthquakes but was prone to hardware or facility failures about twice a month, said Nancy Wong, manager of computer and network operations.

"It was an older environment, not robust by today's standards,"

Wong said. In addition, PG&E shared the building with other companies, so it had less control of environmental factors. "At 8 a.m., when everyone turned on the equipment, we'd get electrical spikes," she said.

PG&E decided to move operations to its center in Fairfield and began searching for ways to minimize the hazard, hassle and expense of the move.

Trucks too risky

PG&E was determined not to use the common modus operandi of physically moving direct-access storage devices (DASD) and tape drives on trucks between data centers, Wong said. "If our truck ran into an embankment, we'd be dead in the water," she said.

It also would take too long, given the utility's goal of 24-hour, seven-days-a-week operations. "We support our own company's information systems, in terms of maintaining gas and electricity availability," Liu said. Another company in California managed a similar relocation in one night with the help of 50 people from the vendor, but typical downtime

would be 24 hours, Liu said.

PG&E found it could avoid such problems by creating a "mirrored" CPU, DASD and tape drive setup in the Fairfield facility and then transferring all data and programs from the old to the new system using high-bandwidth switches and links, Liu said. This meant installing an Amdahl Corp. 5995 in the new center, providing about 108 million instructions per second to match the processing power provided by the old center's Amdahl 5880 and 5860.

The new Amdahl host caused no extra bulge in PG&E's IS budget because the company had already allocated \$3 million to \$4 million for an upgrade at the old center, Liu said. Also budgeted were the upgrades to provide the new center with 700G bytes of DASD.

Pipeline in place

Nor did PG&E need to invest in new leased lines or switching equipment to transfer the programs and data to the new facility. The pipeline for carrying programs and data between the two facilities consisted of Computer Network Technology Corp.'s Channelink network processors, which interconnected host channels at multi-megabit-per-second speeds.

The Channelinks fed into Network Equipment Technologies, Inc.'s (NET) Adaptive STM 18 switches, which support the Synchronous Optical Network (Sonet) standard. The STM 18s took care of allocating chunks of 45M bit/sec. pipeline among the IBM 3380 and 3390 host and DASD, so that as one job finished, another job took up the freed bandwidth, Liu said.

The Computer Network Technology devices were originally installed to support the switchover to the Fairfield backup center when a disaster took down the primary San Francisco center. PG&E originally installed the STM 18s to efficiently allocate the 45M bit/sec. DS3 pipelines among some 300 Cisco Systems, Inc. routers that were interconnecting Banyan Systems, Inc. Vines local-area networks to one another and to the data center. The STM 18s will soon be allocating bandwidth to PG&E's voice network as well.

The transfer took place on schedule; major applications were taken down during the data transfer, between midnight and about 4 a.m. on Feb. 14.

PG&E's move to a new facility is saving the company an estimated \$5 million to \$10 million that it

PG&E, page 58

ON SITE

PG&E San Francisco

Goal: To move data center to a less earthquake-prone, more cost-effective environment with minimum service interruption.

Solution: Set up a mirrored CPU and DASD configuration at existing backup center; transfer data and programs from old data center electronically.

Technology: Computer Network Technology's Channelink channel extenders, NET Adaptive STM 18 Sonet switches, DS3 leased-line connections.

Two opposing forces in modern business are on a collision course: the need for specialized, localized hardware and software solutions, and the need to cost-effectively unite those information resources into a manageable business asset.

As IT managers respond to this challenge, they must cope with explosive growth in the number and diversity of devices and systems. Enterprise systems are becoming profoundly more complex.

Organizations today have a mixture of older, centralized systems and new, distributed systems—a wide variety of technologies provided by an even larger number of vendors.

The challenge is managing this diverse collection of resources. The nature of the problem requires a “best-of-breed” multi-vendor solution.

That's why the leaders in information technology listed here are committed to creating and providing Enterprise Management solutions.

What Is Enterprise Management?

Enterprise management is a strategy for integrated monitoring, measurement and control of multi-vendor networks and computer systems to serve enterprise business needs. It is a technological framework into which multiple management tools, applications and displays can fit, providing end-to-end management of network elements and resources.

Enterprise management requires an organizational commitment to, and consensus on, a common open management platform and a set of open management standards for use throughout the enterprise.

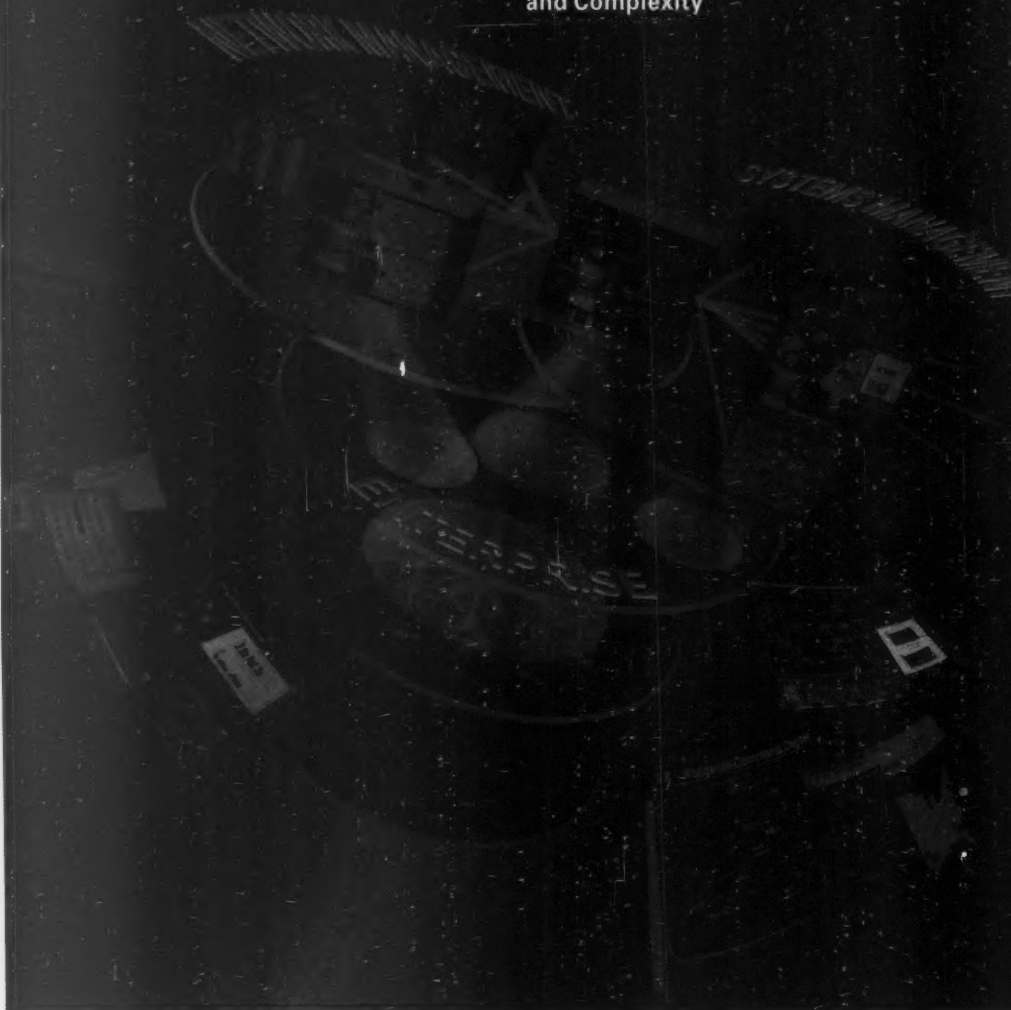
The Benefits

Implementing an enterprise management strategy provides considerable benefits:

- Continuously high levels of reliable and responsive service.
- Smooth incorporation of new client-server solutions with existing mainframe approaches. Your investment in existing mission-critical applications is preserved and augmented.
- Change and increasing complexity can be accommodated more quickly, without jeopardizing system and network availability.
- Greater optimization of network and system resources ensures high quality service is maintained at the lowest possible cost.
- Automation of management processes allows systems administration and operational costs to reduce steadily as your enterprise grows.
- Network and data security is enhanced.

ENTERPRISE MANAGEMENT

Managing Change
and Complexity



What You Can Do Today

To achieve the benefits of enterprise management, take these steps:

- Develop organizational consensus on a strategy and on a management platform:
 - working with your key vendors and carriers, develop a strategy for implementing this enterprise management architecture within your organization.
 - establish purchasing guidelines that all parts of your organization can follow so that their evolving information systems can fit into the enterprise management approach.
- Select a common open management platform for use across your enterprise that:
 - enables management of products and services from multiple vendors.
 - is standards-based.
 - enables integration of management tools and applications from multiple vendors.
- Review existing management tools and interfaces and prioritize upgrades that move the organization toward enterprise management in the most cost-effective and rapid manner possible.

- Favor distributed and object-oriented management solutions.

► Use management solutions that incorporate open management standards such as the Simple Network Management Protocol (SNMP), the Common Management Information Protocol (CMIP) and the OSF's Distributed Management Environment (DME).

► Automation is a key element in effective enterprise management. Move toward “self-managed” systems.

► Require the use of open management protocols in new information system purchases and deploy open management protocols in existing network elements, distributed systems and vendor-specific management systems.

Contact the leading vendors listed here. They can provide you with additional information on the enterprise management strategy that's right for your organization, and the products and services you need to implement it.

These industry leaders have come together to promote the business benefits of an Enterprise Management Strategy. They can be contacted directly or by using the reply card below.

The Partnership Legend illustrates relationships that have formed to provide these complex, multi-vendor solutions.

The Management Solutions Legend denotes some of the types of products and services each of these vendors contributes to a complete solution.

SOURCES OF ENTERPRISE MANAGEMENT SOLUTIONS



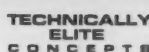
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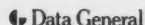
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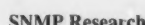
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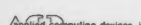
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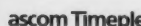
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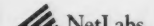
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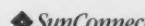
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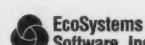
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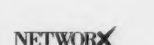
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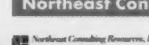
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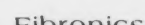
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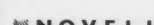
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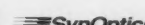
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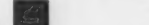
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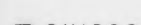
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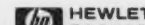
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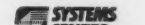
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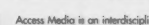
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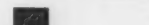
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ACT NOW!

Cabletron routers allow mixed backbones

By Joanie M. Wexler
ROCHESTER, N.H.

Cabletron Systems, Inc. is forging ahead with plans it outlined last fall to migrate users of traditional packet-switched local-area networks to high-speed backbones such as cell-based Asynchronous Transfer Mode (ATM) networks.

The vendor said last week that it is integrating homegrown routing into its smart hub line with two new products that, when combined with Cabletron Bridge Router Interface Module (BRIM) technology, "allow users to pick a backbone as they see fit — like building a product with Legos," said Michael Skubisz, director of product management.

The company implements BRIM technology in the form of 32-bit PC cards for its hubs; the BRIM cards snap onto the company's EMM-E8 bridge/routing hub module or stand-alone NBR-620 scalable bridge/router, announced last week, to determine the "flavor" of backbone the peripheral LAN will feed into, such as ATM, Fiber Distributed Data Interface or

a T1 wide-area network.

The EMM-E6-plus-BRIM and the NBR-620-plus-BRIM are compatible with high-end routers from Cisco Systems, Inc. and Wellfleet Communications, Inc., which are devices likely to constitute the core of a corporate network infrastructure, Cabletron said. In addition, an ATM BRIM will allow users to style their wiring closets to feed into pure ATM switch backbones, such as those from Cabletron partner Fore Systems, Inc. in Pittsburgh.

Cabletron already offers low-end routing modules for its hubs from both Cisco and Wellfleet for interconnecting the LANs supported in a given hub. A question lingers as to how many users desire integrated routing and "hubbing," given the recent cancellation by LAN heavyweights SynOptics Communications, Inc. and Cisco of their joint RubSystem, a project to combine the vendors' high-end hub and router chassis.

The vendors aborted all but the net management portions of the 18-month-old project last month [CW, April 19], reportedly due to "lack of user interest" in combining hubbing and routing functions at the high end.

On the other hand, the Cabletron endeavor targets the peripheral LAN segments off the corporate backbone and "longer term, some type of switching integrated into wiring hubs is clearly necessary," said Val Sribar, a senior research analyst at Meta Group, Inc., a consulting firm in Reston, Va.

"The more users want to segment their networks for higher speeds, the more expensive it gets to use stand-alone routers to extend that traffic back from the hub to a server that is, say, in a cluster in a data center," Sribar said.

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ATM update

Cabletron said that next December or January, it will announce a "superhub" with a 2.5G bit/sec. backbone for carrying traditional packet-switched traffic as well as ATM cells.

The hub will have ATM LAN card modules available, and the company will develop corresponding ATM network adapters for PC platforms, such as Extended Industry Standard Architecture and Micro Channel Architecture, according to Michael Skubisz, director of product management.

Cabletron said it will continue to look to its partner, ATM vendor Fore Systems, for supplying the pure ATM switches that form a high-end backbone, as well as for adapter cards for high-end workstations.

Skubisz said Cabletron will eventually produce a stand-alone ATM switch, but it will be a smaller capacity device that sits in the wiring closet and feeds into a backbone of high-end ATM switches.

—Joanie M. Wexler

Distributed systems demand the same level of management and availability that IS has historically provided in a mainframe environment. Yet the technical approach to distributed systems management is fundamentally different from that applied to centralized systems.

Hardware and software resources to be managed tend to be more numerous, widely-dispersed and provided by a wide variety of vendors. Put simply, old approaches to systems management cannot be incrementally extended to manage these new distributed systems. A new approach is required.

Why A New Approach Is Necessary

When compared to the centralized mainframe environment, tracking and intervention tools for distributed systems management still appear somewhat primitive - even as the number and variety of systems IS professionals must manage is increasing. At the same time, IS professionals are expected to provide backup and recovery services, fault isolation and repair capabilities, and updating procedures that provide levels of service similar to those users have come to expect from centralized systems. These demands all threaten to increase administrative and support expenses. And if these systems are poorly managed, there's a real chance such expenses may actually erase the cost reductions achieved through downsizing.

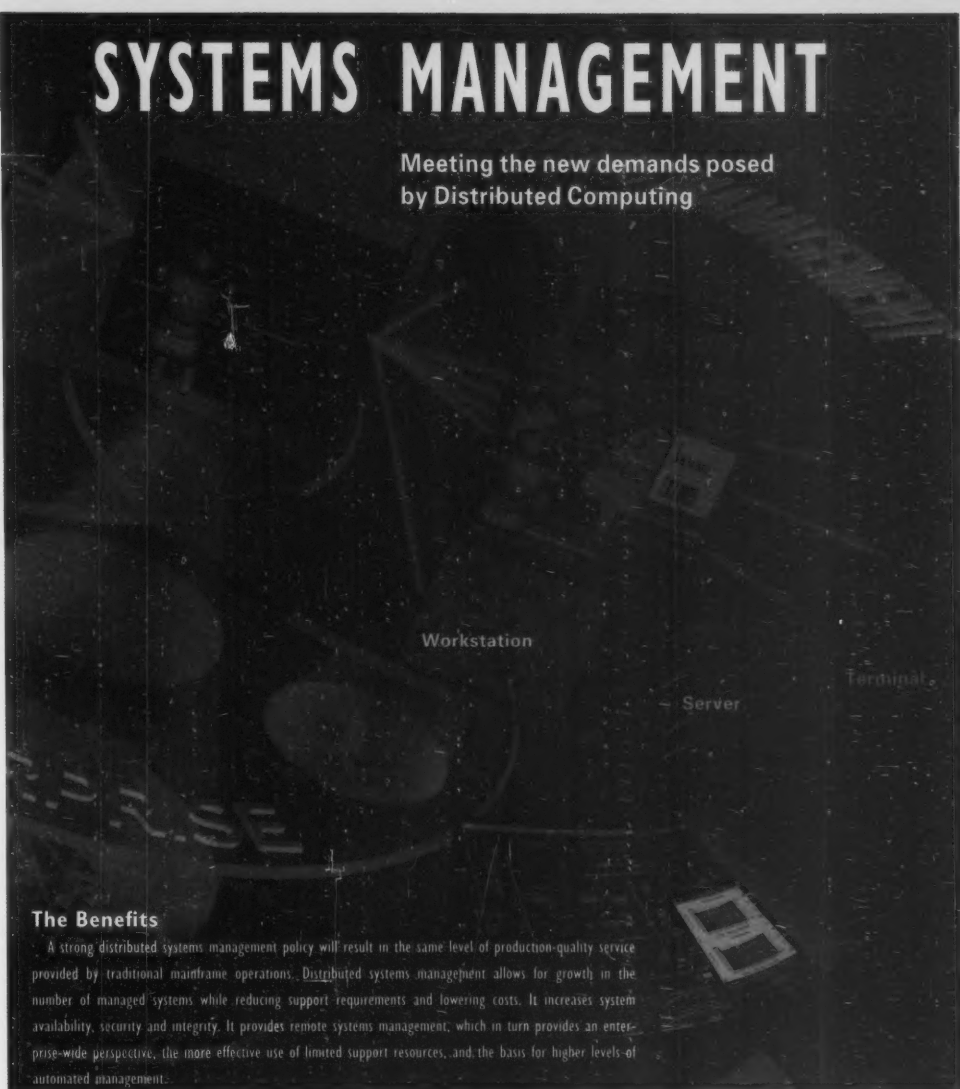
Effective distributed systems management addresses these issues. It provides the considerable business benefits of distributed computing within a context that allows for effective management of IT resources and costs.

What You Can Do Today

► Implement remote management solutions that bring the problem to the troubleshooter, not the other way around.

SYSTEMS MANAGEMENT

Meeting the new demands posed by Distributed Computing



The Benefits

A strong distributed systems management policy will result in the same level of production-quality service provided by traditional mainframe operations. Distributed systems management allows for growth in the number of managed systems while reducing support requirements and lowering costs. It increases system availability, security and integrity. It provides remote systems management, which in turn provides an enterprise-wide perspective, the more effective use of limited support resources, and the basis for higher levels of automated management.

- Develop organizational consensus on an enterprise-wide open management platform that can interface with your legacy systems and newer distributed systems.
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- Favor object-oriented management solutions.
- Place open management agents on systems, clients and servers throughout the enterprise that will communicate with your management platform.
- Take an application-oriented view towards the utilization of system resources. This allows you to target your management focus on areas likely to provide the biggest and quickest return to end users.
- Create automated responses to system problems - responses that automatically alert system managers when problems occur, or which resolve problems at the same speed they occur.
- In the switch from centralized to distributed processing, leverage the expertise, skills and methodologies of existing MIS personnel. And remember that

legacy systems are likely to play a key role in mission-critical applications for many years to come.

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PictureTel makes videoconferencing cheaper

By Joanie M. Wexler
DANVERS, MASS.

PictureTel Corp. last week attempted to stimulate the technically advanced but slow-to-gel videoconferencing market by reducing the price of interoperability with other vendors' gear and introducing lower end equipment for casual users.

The firm slashed from \$5,000 to \$2,500 the cost of adding the CCITT H.320 worldwide video compression algorithm to the proprietary compression software that runs on PictureTel's System 4000. H.320 is unofficially called "px64," indicating multiples of 64K bit/sec. circuits.

PictureTel also said that this fall, users can add H.320 to the vendor's M-8000

bridge, a device that allows multiple locations to participate in electronic meetings. Users would pay about 15% of the original purchase price for the capability, said James S. Idelson, a PictureTel senior director.

However, most PictureTel systems are installed for internal use and talk only to one another, a situation that could con-

tinue to stymie user expenditures in H.320 software. For example, pharmaceutical firm Hoechst Celanese Corp. in Bridgewater, N.J., runs 17 PictureTel videoconferencing systems and inter-networks them through the M-8000.

"We've only done a bit of intercompany conferencing, and for that we go through AT&T's bridge" service, said Hal Howard, senior telecommunications analyst. "While the drop to \$2,500 [to add H.320] is getting more appealing, with 17 systems, we're talking a lot of money."

"This is a chicken-and-egg syndrome," observed Tim McElgunn, an associate analyst at Datapro Information Services Group in Delran, N.J. "If you don't have the standard, it's tough to do interenterprise videoconferencing."

He added, though, that "companies have seen what happens, say, during acquisitions and mergers when parties come in with incompatible systems."

PictureTel also made the following moves:

- Reduced the price of the 16-port M-8000 from \$75,000 to \$60,000.
- Introduced a smaller version of the M-8000, starting at \$45,000, that supports three to six conferenced locations.
- Added a Microsoft Corp. Windows interface to the M-8000 management console and gave network administrators the ability to perform remote diagnostics and call setup.
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3M Reliability

PG&E relocates

CONTINUED FROM PAGE 53

would have had to spend to upgrade the San Francisco center to an acceptable reliability level, Wong said. "We would have had to put in bracing and redo the flooring because of the new equipment we would be bringing in. It's a chilling thought," she said.

In addition, the company is cutting staff by four to six people in the old center, which now houses peripherals, particularly the printers that output billing, Liu said. The new center is reducing staff from 22 to 12 people. This is primarily because of the implementation of Commensa, an automated systems management package from Votek Systems Ltd. in Toronto, which was adopted at the same time as the move.

Reliability and processing levels at the new center are far superior to the old, Liu said. "I had transaction processing running on the new system without outage for 45 days; then we had some minor hardware glitch." And with the new Am-dahl host, jobs that used to take seven hours now take just three, Liu said.



PG&E's Nancy Wong saved time, money



Even if your network copes with your enterprise needs now, is it prepared to handle the way your organization will move and use information tomorrow? Your network will need to support applications far more complex and powerful than those you're using today. And it will need to do this flexibly and reliably, across organizational and geographic boundaries.

Without an integrated, open approach to network management, building and managing a network that will evolve successfully to meet these demands is impractical. Without effective network management, cost control is impossible.

The Benefits

Networks have become a crucial determinant of enterprise efficiency and competitiveness, which is why effective network management is now more essential than ever to the health and success of your organization.

Network availability, for example, is essential to mission-critical applications such as customer service, inventory management, EDI and product development. Network management enables consistent, reliable network service that organizations can depend on. An integrated network management approach will enable your enterprise to quickly respond to requests for new services to meet evolving business needs. This is especially crucial in a period when use of network-based applications is growing rapidly.

Integrated network management provides a foundation for higher levels of automation of administrative and operational tasks. It also improves responsiveness to user needs while substantially lowering support costs. Integrating your network management solution into a broader enterprise management strategy is far more cost-effective than investing in closed, vendor-specific solutions on an ad hoc basis. And it provides

NETWORK MANAGEMENT

Ensuring flexibility, consistency and reliability

What Is Open Network Management?

To manage today's multi-vendor networks and to be ready for tomorrow's needs, your enterprise must have an open, standards-based network management approach. Key standards are the Simple Network Management Protocol (SNMP), the Common Management Information Protocol (CMIP) and the OSF Distributed Management Environment (DME).

The platform needs to be open, multi-vendor and interoperable; and it must accommodate existing approaches and managed devices along with new devices and management tools.

Keeping all components of the network under control requires remote monitoring and control of the various multi-vendor devices throughout the network, open management interfaces to carrier network services, and detailed instrumentation of key performance parameters in network and media elements.

your IS department with the information necessary to track costs and optimize network resources while maintaining desired service levels.

What You Can Do Today

- Address network management from a strategic perspective. Ad hoc solutions and their incompatibilities will ultimately cripple your network.
- Choose an open platform for managing your enterprise network that is compatible with other

enterprise management choices. Gradually, eliminate proprietary management interfaces, instead choosing new equipment based on open standards such as SNMP and CMIP.

- Place standards-based management agents on existing network devices.
- Make the use of open management protocols a requirement for new network purchases.
- Acquire management tools and applications for networks that integrate with the open management

platform you choose.

- Favor object-oriented network management solutions.

Contact the leading vendors listed here for more information. They are committed to helping you implement an integrated management approach to building and managing open, interoperable, multi-vendor networks.



SOURCES OF NETWORK MANAGEMENT SOLUTIONS



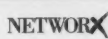
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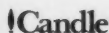
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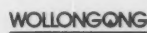
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E-mail deluge

CONTINUED FROM PAGE 53

Peter Lutz, chairman of the Department of Information Technology at the Rochester Institute of Technology in New York, made the mistake of getting on an Internet distribution list on educational computing. He was quickly inundated with hundreds of messages per day.

After one week on the list, Lutz said he found that even deleting all the messages was time-consuming, so he got off the list.

Part of the solution to message overload is E-mail filtering technology, which automatically puts incoming messages into certain electronic folders (including the "trash" folder), depending on the sender or subject. For example, Microsoft Corp.'s Mail Version 3.0 for PC Networks permits filtering and filing.

At what point does the volume of E-

mail require some automated filtering? "It seems to me that somewhere around 20 to 30 messages per day you begin to feel the need for tools to manage it," said Thomas W. Malone, an MIT professor.

Malone and other MIT researchers developed a prototype filter in the mid-1980s, called the Information Lens, that allows users to set up if-then rules for sorting information. "A typical rule might be: If this message is from my boss, put it into my urgent folder," Malone said.

The MIT prototype has since been commercialized and incorporated into two available products: BeyondMail from Beyond, Inc. in Cambridge, Mass., and Personal Assistant for Digital Equipment Corp.'s All-In-1 system.

For Unix, there is a public-domain program called ELM that can filter E-mail by name or subject. In addition, several public networks have "squelching" features or "bozo filters" that block recipients from receiving messages that are from certain people or on certain topics.

Workflow technology now provides a software platform for the critical business process of organizations all over the world.



Sue Wolk
Executive Director
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Monster database

Another approach is to dump E-mail messages into a "monster text database" and then use one of the many text-retrieval software packages to find what you really need.

Monte Davis, a corporate speech writer in South Orange, N.J., who gets 200 messages a day, uses this after-the-fact approach. He said he lets some messages sit on his hard disk for a few weeks and then uses a personal information manager called Ize — an orphaned product formerly sold by Persoft, Inc. in Madison, Wis. — to flag keywords.

But filtering technology is not the whole solution to E-mail overload. Users also need to apply to electronic information the same work habits that prevent paperwork overload, Chaleff said.

Users should adopt a "do it now" philosophy of reading, filing and deleting E-mail quickly, Chaleff said. "It is foolish to think you will have more time later" for disposing of E-mail, he said.

Be selective

Two of the most important survival skills for the information age are to get off electronic mailing lists that are not critical to your work and to file important E-mail in subject files for easy retrieval, experts said. E-mail senders can help by putting clear subject headings on their missives and keeping each message to one subject.

The volume of E-mail can also be reduced if users refrain from sending "cc:" copies and forwarding E-mail unnecessarily. IS departments can help by training workers on how to use the E-mail housekeeping features, Chaleff added.

The underlying problem is that users never learned how to control their paperwork overload and transferred their poor work habits to the E-mail world, Chaleff said. Even people who are good at throwing out paper may not have made the "mental leap" to be ruthless with E-mail as well, he said.

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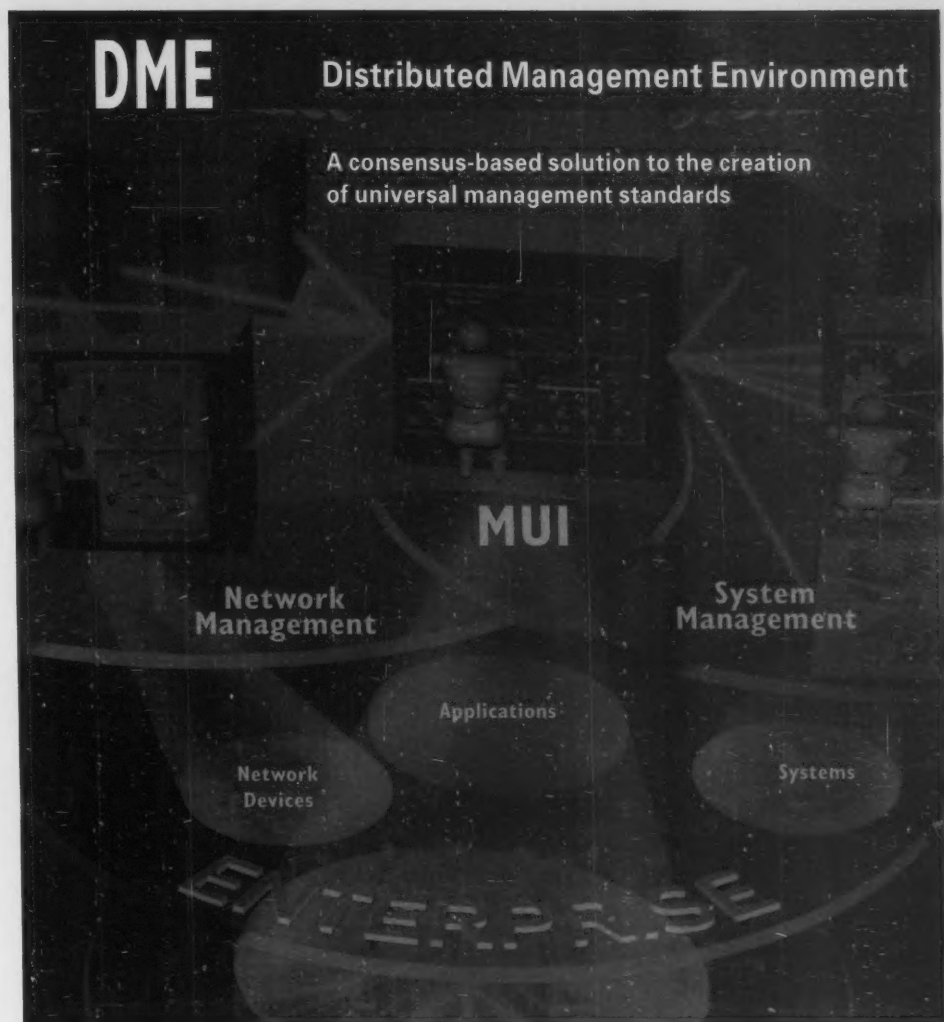
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DME builds on existing standards. It is not an alternative to other standards. Rather, it represents a complementary approach that encompasses existing SNMP and CMIP standards and endorses interfaces devised by the Network Management Forum, X/Open and others.

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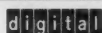
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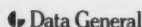
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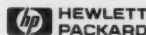
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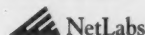
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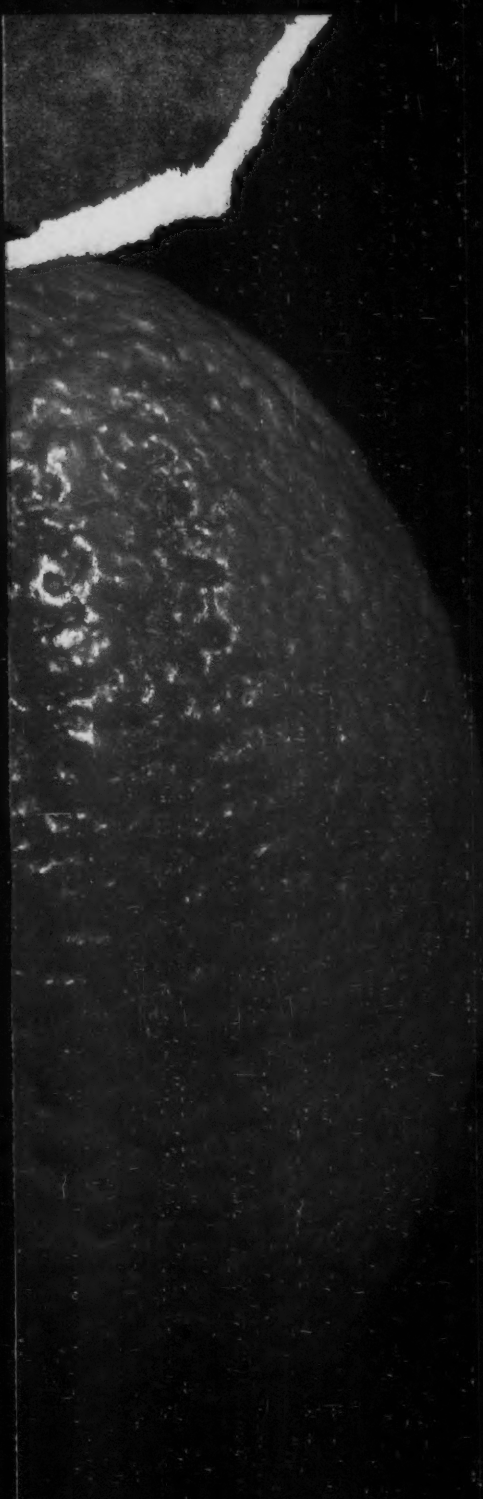
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BYTE Magazine Reader's Choice, June 1992

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BYTE Magazine Award for
Cross-platform E-Mail, March 1993

•
Network Computing's Certified Interoperable
Application Award, December 1992


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Network World's Enterprise
Technology Award, December 1992

•
Software Digest's Highest Overall Evaluation,
8.7 Rating, 1992

•
MacUser Editors' Choice Award, 1992

•
MacWEEK 1992 Editors' Choice
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Large Systems

'In' sourcing saves utility \$600,000

Savings paid for new networked desktop systems

By Thomas Hoffman
NORTH BRUNSWICK, N.J.

For a company that designs and builds turbine generators and electrical power plants, it's hard to believe that ABB Power Generation, Inc.'s information systems operations were mired in the Dark Ages of computing as recently as three years ago. But much has changed since Patrick B. Carney took charge of IS at the engineering firm.

Carney, who became ABB Power's IS director in 1990 after a stint as a senior consultant at Wang Laboratories, Inc., did not realize how much of a challenge he had taken on until he rolled up his sleeves and looked under the hood.

In 1990, the \$500 million, privately held subsidiary of the Swedish/Swiss-owned engineering conglomerate ASEA Brown Boveri was outsourcing all of its financial applications to Sungard Recovery Services, Inc. for \$70,000 per month.

In addition, only 30 of 600 users had network access between the firm's primary offices here and in Richmond, Va., and more than half of the \$4 million-plus IS budget was being spent on consulting services.

"When I came here, there was almost no infrastructure to speak of," Carney said. Since then, he and his six staffers have fine-tuned the firm's IS operations through a series of successful projects.



ABB Power's Patrick Carney: In three years he built an infrastructure from scratch

The company has since reinvested the savings from that fine-tuning in new standardized, networked desktop systems.

Streamlining redundancies

Carney and his staff started in mid-1990 by conducting a four-month study of the outsourced financial systems, including general ledger and accounts receivable. They found outdated software, redundant system calls and the need to narrow down financial processing to its core requirements.

"We took a pure, back-to-basics approach. For example, did we really need to do two accounts payable runs each week? No, so we streamlined along those areas," Carney said.

Those changes pared ABB Power's outsourcing costs from \$70,000 to \$35,000 per month. Then ABB Power put the contract up for bid between Sungard and ABB Power's sister company, ABB Information Management Services, Inc. in Windsor, Conn.

In March 1991, the sister company won the bid and began processing those applications on two IBM 3090 and 3081 mainframes. Those

ABB Power, page 68

Managing data in a new world

By Rosemary Cafasso

Of all the technical challenges that client/server implementation and downsizing can bring, some users are finding that data management is one of the more time-consuming chores.

Baxter Healthcare Corp. has developed decision support client/server applications but recently began the more difficult task of integrating production client/server systems with the existing mainframe host.

At issue for Baxter was data synchronization. While decision support client/server applications can essentially borrow a copy of mainframe data and work with it, a production application typically needs host data and makes real-time updates.

No clear-cut path

But the problem for Baxter was that the issue is a relatively new one and so there are few proven approaches or products.

Without an obvious solution, Baxter had to evaluate several techniques to integrate IBM IMS and DB2 host data with the new client/server platform. It ended up selecting a change database strategy in which it would modify the mainframe database environment to send updates to a separate database and then download those changes to the local-area network database at regular intervals.

But Michael Purcell, a staff software engineer, said the decision was not easy. Each approach has its good and bad points. The change database, for instance, requires programmers to develop mechanisms to ensure updates are delivered in a timely fashion.

The team also evaluated other mechanisms, such as rebuilding the entire local database each day. Purcell said Baxter has tried this with other applications and found that it took too long. It also explored the option of two-phase commit technology, a mechanism that essentially keeps track of updates and double-checks each database to ensure it is aware of the change before it is executed.

This technology is just emerging

in the IBM DB2 world, and other companies offer it with their database management system, but "it would usually require a pretty homogeneous environment," Purcell said. "I'm not counting on it for this year."

The Department of Transportation's Federal Highway Administration (FHA) is another user slogging through the task of evaluating multiple options for its DBMS environment. Unlike Baxter, however, the organization is focused on downsizing its operation. The idea is to offload processing from the mainframe-based Computer Associates International, Inc. CA-IDMS

to lower cost systems. The organization relies on centralized mainframe processing from the Transportation Department's computer center.

Working with CA-IDMS/PC, the FHA just completed a feasibility study on downloading extracts of host data. The project seemed promising, and the staff even ironed out transfer issues with data compression techniques.

But after close scrutiny, the staff decided to eliminate this option because the synchronization issues were too daunting, and it would have required too much continued reliance on the mainframe, said Jack Reinhart, chief of the programming systems branch.

New offering

Meanwhile, the organization is testing a newer CA offering that may do the trick, Reinhart said.

A new release of IDMS/PC provides cooperative processing extensions and will work with the latest release of the host-based IDMS. The idea would be to use the mainframe strictly as a data repository and count on the front-end PCs for nearly all processing.

The approach would leave the data management issues to the mainframe and remove potential problems with synchronization. It could also cut the organization's mainframe costs by almost two-thirds, Reinhart said.

Yet it still has a downside because "we would still have some mainframe costs," he added.

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Squeaky user gets \$10,000 price break

By Mark Halper
BOISE, IDAHO

It can pay to speak up, as Hewlett-Packard Co. user Intermountain Gas Co. recently learned — to the tune of about \$10,000.

By its own assessment, Intermountain is a satisfied HP 3000 shop, but it was none too pleased when HP

recently wanted to charge the gas utility \$35,000 for a 1,600-line-per-minute impact printer.

The same HP-made printer, which HP calls the 2567C, was available from an HP OEM vendor, Data Products, Inc. in Woodland Hills, Calif., for \$25,000.

So, during a gripe

session at a conference run by the user group Interex last month in Seattle, Mike Farrell, Intermountain data center operations supervisor, posed the obvious question to a dais full of HP executives: Why couldn't he get the printer at a lower price directly from HP?

After explaining that the pricing disparity was a consequence of the "significant change"

sweeping computer distribution circles and noting that HP's price takes into account superior support levels, Manuel Diaz, HP Americas sales chief, promised Farrell he would look into the situation.

While Farrell never heard back directly from Diaz, he ultimately received what he sought — a large price break.

An HP sales representative recently
Price break, page 66

Electronic news services

News in real time

Financial firms use networks to keep dispatches current

By Thomas Hoffman

■ In their ongoing efforts to differentiate themselves from their competitors by adding value to their products, financial services firms are turning to electronic news services. Users said these services provide market makers with the latest information about what is shaping the business sectors their analysts track.

For example, Coopers & Lybrand, one of the Big Six accounting firms, has developed a network designed to provide news service reports on industry-specific markets to its 4,000 desktop-enabled partners and managers in the U.S. As a result, a Coopers & Lybrand partner who provides accounting information to major oil companies, for instance, is better equipped to inform his clients of the most recent changes in their industry.

The system, known as Coopers & Lybrand as The Knowledge Network, comprises news and wire services from Dow Jones & Co. Use of The Knowledge Network by Coopers & Lybrand partners "shows our customers that we're tracking those industries closely," noted Andrew B. Zimmerman, a partner at Coopers & Lybrand who helped set up The Knowledge Network.

As an extension to The Knowledge Network, Coopers & Lybrand began subscribing last July to DowVision, a Dow Jones electronic news service that provides automatically filtered, real-time business news and information through corporate computer systems directly to customers' desktops. Included on DowVision is the Dow Jones News Service, its international news service, Capital Markets Report, Professional Investor Report and Federal Filings.

New news service

In March, the New York-based accounting firm selected DowVision to serve as a core component of a new electronic information news network Coopers & Lybrand plans to provide to tax and financial entrepreneurs. It is called the Tax News Network.

Zimmerman said DowVision has provided his firm with several benefits.

In addition to maintaining news information on Coopers & Lybrand and other Big Six competitors,

DowVision tracks information about customer markets. Zimmerman said this has been helpful in landing new customers, although he noted that he has no empirical evidence to support this. "Within a matter of minutes, you can get up to speed on a company's industry and sound fairly intelligent without investing a large amount of time doing research," Zimmerman said.

Ahead of the printed word

An end user of the service, Fred Quattlebaum, a tax manager at Coopers & Lybrand, said DowVision has been helpful for users.

"Most of my clients are multinational firms in rapidly changing industries, such as pharmaceuticals and high tech, which are looking to expand their opportunities in Latin America and Eastern Europe. To help them assess these various opportunities, I really have to stay on top of their industries, and this service has been extremely helpful. I was often days behind by us-

Electronic news services are also gaining popularity outside of the financial services industry. Take New Jersey's largest public utility—the Public Service Electric & Gas Co. (PSE&G)—which uses Dow Jones' DowVision service for timely updates on alternative fuels.

PSE&G runs DowVision over a 500-node Lotus Development Corp. Notes network for its engineers to gather data on the latest scientific breakthroughs in areas such as natural gas vehicles, according to Brian Connelly, a knowledge engineer in PSE&G's

strategic information systems group.

PSE&G, which paid \$300,000 for the system with a 100-user license starting in late 1992, has already saved an unspecified amount of money by reducing costs that had been tied to dialing up public databases. Though Connelly could not quantify the systems' payback, he said the investment has been worthwhile.

"It saves our people a tremendous amount of time, since they don't have to read through all the newspapers and trade journals," he said. — Thomas Hoffman

Plenty of platforms

DowVision runs on Microsoft Corp.'s Windows and DOS, Unix, Apple Computer, Inc.'s Macintosh, Lotus Development Corp.'s Notes and Next, Inc.'s NextStep operating environments.

ing newspapers and industry periodicals," Quattlebaum said.

Ark Asset Management Co., a New York-based investment adviser, uses multiple data feeds from Dow Jones, Knight-Ridder, Inc. and Reuters Ltd. to route financial news stories to its 25 to 30 consultants over a Novell, Inc. NetWare v3.11 Ethernet network.

Paul Cucurullo, MIS manager, said DowVision offers a feature that enables Ark Asset Management to merge all the data feeds into one database so that users need

only one front-end tool — DowVision — to access data from a range of sources. Ark Asset Management, which has been running DowVision on Sun Microsystems, Inc.'s SPARCstations for eight months, has compiled one financial quarter of investment information in its database.

The electronic news feeds have been a real benefit to Ark Asset Management, Cucurullo said. "There's so much news out there now. It's so easy to miss out on a story or a wire release," he said.

HP changes 'elite' eligibility

By Mark Halper
PALO ALTO, CALIF.

Hewlett-Packard Co.'s proprietary minicomputer division has changed the rules for becoming an elite customer, shifting from criteria based purely on business volume to reliance on a willingness to open kimono.

Under the old criteria, a company would gain special status by purchasing 100 or more HP 3000 minicomputers, which run on HP's MPE operating system. Knighted members of the 100 Plus Club — there were fewer than 20 — were honored with special access and input to HP's research and development operations.

But according to HP product line manager Pat Adamiak, the unit volume criteria became antiquated as HP rolled out larger machines that perform the job of several smaller machines.

What is more, some users said privately, as HP's 3000 business slows at the hands of a booming Unix-based HP 9000 business, fewer customers are likely to reach the 100-machine plateau.

So HP has quietly dissolved the esteemed 100 Plus Club and replaced it with what it now calls the Customer Advisory Council.

As with the 100 Plus Club, the Customer Advisory Council members benefit from R&D privileges.

But they also pay a price. The members are expected to share with HP intimate knowledge of their own business plans, which Adamiak said helps HP formulate strategic information

systems plans for the customer. They are also expected to devote ample time and energy to providing HP with input and feedback.

Adamiak claimed that membership on the council is based largely on a company's willingness to enter an open, two-way relationship.

The elite circle still includes some hefty accounts, however: HP offered membership to all of the 100 Plus Club members, and most of them accepted.

Those who declined did so because they are migrating to HP Unix platforms, Adamiak said.

The entire Customer Advisory Council meets once a year with HP and recently held its first annual gathering last month in Cupertino, Calif.

Some members who asked not to be identified said HP's new criteria assure more of a representative cross-section of user types.

"The 100 Plus Club was geared to large HP sites," one member noted. "That concept got rolled into a council that tries to more accurately represent HP customer needs."

Adamiak said that under the new system, HP hopes to provide a more sophisticated level of advice that takes into account more factors than what was available to HP in the past.

"We may have been suggesting planes when all someone needed was trains," he noted.

The participants, according to those familiar with the membership, include Hertz Corp., Northern Telecom, Inc., Procter & Gamble Co., the city of Tempe, Ariz., 3M Co., the California Department of Corrections, Medstat Systems and Revlon, Inc., among others.

Price break

CONTINUED FROM PAGE 65

told Farrell that Intermountain could have the printer either for \$21,000 or for \$23,000 with hardware modifications that would outfit the printer with a font readable by U.S. Postal Service scanners. Compliance with the postal standard yields hefty discounts on postal rates.

Farrell said he will send off his order for the \$23,000 printer as soon as he gets all the purchase approvals from Intermountain.

What is not clear is whether HP is prepared to offer the printer to other customers at the same reduced price.

A spokesman for HP's network printing division said Intermountain is a long-standing HP customer for which HP decided in this "unique" case to increase its discount. The spokesman also said some OEM vendors are able to offer end users prices lower than HP's because they buy in large volumes from HP's Guadalajara, Mexico, manufacturing plant and therefore receive price breaks, which they pass on to end users.

Farrell noted that DataProducts profits by volume because it replaces the HP interface in its HP-made printer with an interface compatible with several computer brands and therefore sells into a larger market than does HP.

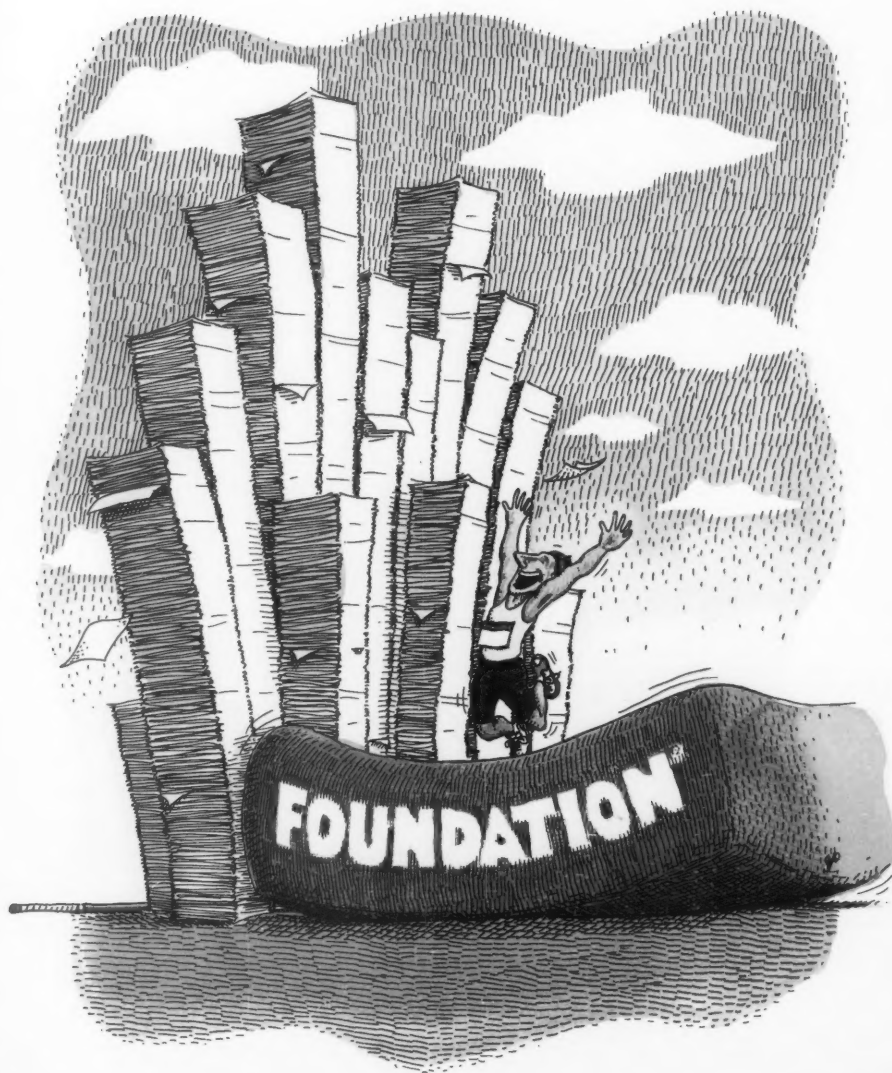
Adopt-a-customer

As part of its user relations plans, HP is considering an "adopt-a-customer" program in which hundreds of HP R&D engineers would each work closely with an assigned customer.

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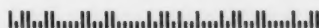
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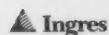
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ABB Power

CONTINUED FROM PAGE 65

moves further reduced ABB Power's monthly financial processing costs to less than \$20,000, which translated into more than \$600,000 in annual savings compared with the original deal.

Now ABB Power plans to bring its financial applications in-house onto a less costly IBM Application System/400. The transfer of the 350,000 annual financial transactions onto a cheaper platform, Carney said, could save the firm \$150,000 per year.

ABB Power used the savings from its financial systems revamp to update its desktop and network environments. Portable, user-friendly PC environments are essential for ABB Power's engineers, Carney said, because the company's project managers often work off-site to brainstorm with other technicians when designing generators and power plants.

Carney and his staff delivered an integrated desktop environment early last year by standardizing on several distributed platforms, including Compaq Computer Corp.'s SystemPro LT file servers and notebooks, Lotus Development Corp.'s CC-Mail, Novell, Inc.'s NetWare v3.11 network operating system and Microsoft Corp.'s Windows 3.1.

Some rough spots

Still, the standardization strategy did not come about without a hitch. Carney said the software was plagued with the Jerusalem B virus, resulting in more than 20 hours of downtime per month in early 1992. Carney blamed the contamination on frequent international travel by ABB staff members, who loaded infected disks onto U.S. systems.

ABB Power attacked the problem by standardizing file servers, disks and antivirus software. Since June, the networks have been 99.8% operational.

ABB Power is now what Carney called "a 100% Windows shop." In addition to Windows 3.1, ABB Power has standardized on Microsoft's Word for Windows word processing system, Excel spreadsheet and Office software suite.

Among ASEA Brown Boveri's 100-plus U.S. subsidiaries, ABB Power appears to have taken a leadership role in standardization. Carney said several ABB U.S. sites and the parent company in Zurich have embarked on similar projects.

ABB Process Automation, Inc., which manufactures process control equipment, has leveraged ABB Power's success in these environments and embarked on standardization plans of its own, said Larry Hiemenz, director of IS at the Columbus, Ohio, firm. He said ABB Process is in the midst of a two-year project to standardize on Windows and is exploring Notes.

"The issue with a conglomerate is to leverage synergy with other units wherever possible while maintaining autonomy at a local level. Since the parent company's management philosophy gives precedence to local needs, that's smart," Hiemenz said.

Candle's performance monitor for SMS debuts

By Jean S. Bozman
SANTA MONICA, CALIF.

■ **Candle Corp. is putting its Candle Technology (CT) object-oriented technology to work in a product aimed at supporting IBM's System Managed Storage (SMS) software-based storage manager.**

Called Omegamon II for SMS, the product fits alongside the other modules in Candle's Omegamon series of data center performance monitors.

Omegamon II for SMS is the first storage-related product in the Candle line, said Vince Niedzielski, Candle's vice president of IS systems management. "We collect monitoring data and store it in a CT server," he said. That data tracks the storage of SMS "data sets" on disk drive hardware. "On the display, you can

see how the storage use is related to the applications you're running," he said. Users set thresholds that warn them of system imbalances.

Now in early-release sites, Omegamon for SMS is slated to ship in the fourth quarter. It is priced at \$17,000 to \$70,000 for a single license.

Late entry

Industry analysts said that while the Omegamon product takes a unique approach to managing SMS, it will compete with other storage management software from Computer Associates International, Inc., Legent Corp., Boole & Babbe, Inc. and Sterling Software, Inc. Candle is considered to be late in entering the storage management arena, some analysts said.

Even as information systems managers are working to downsize mainframe

applications, the amount of data stored in IBM-compatible disk drives is growing at more than 20% a year, according to Gartner Group, Inc. in Stamford, Conn. IBM introduced SMS about four years ago as a way to "stage" data into and out of appropriate storage devices according to access patterns and cost.

Candle is using its SMS monitor as a building block that complements existing Omegamon modules, said Fred Joy, a senior research analyst at Meta Group, Inc. in Stamford, Conn. "If you already have Candle monitors for [IBM's] CICS, MVS, DB2 and VTAM products, you're now getting another major subsystem within the same Omegamon suite," Joy said.

He added that the new Candle monitor, which tracks data storage in disk drive "volumes," would also help manage mainframe data not stored under SMS.

New Products

Database management systems

Landmark Systems Corp. has introduced Version 1.2 of The Monitor for DB2 (Tmon for DB2).

According to the company, Tmon for DB2 is a performance monitoring and analysis tool for IBM's DB2 relational database management system.

A history of performance data is maintained, and the product offers features that include on-line analysis, a report writer, an Explain utility and quick-access menus.

Prices range from \$18,000 to \$38,000 per CPU.

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8000 Towers Crescent Drive
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Software application packages

Systems Design & Development, Inc. has introduced its new line of Seamless Integrated Solution (SIS) telecommunications software products.

According to the company, all of the products operate on IBM's Application System/400 and were designed to integrate with the company's Telecommunications Call Manager/400 call accounting system.

The SIS products consist of the Toll Free Analyzer, a toll-free demographic analyzer and a toll-free abuse reporter; an on-line, long-distance phone bill reconciler called Recon/400; Toll Fraud Tracker; TCM Convention Telephone Bill Processor; TCM Staff Phone Directory and TCM/400, a call accounting system.

Prices range from \$8,000 to \$50,000.
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Boca Raton, Fla. 33432
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Utilities

Allen Systems Group, Inc. has announced the Statistical Interface and Reporting Facility (SIRF).

The product is a performance reporting tool designed for Computer Associates International, Inc.'s CA-IDMS environment.

According to the company, SIRF collects statistics from IDMS on-line transactions, local-mode jobs and Central Version batch. The information is stored on the IDMS journal and/or the Systems Management Facility.

Users can write their own custom reports or choose from more than 30 standard SIRF reports. The ability to capture local-mode IDMS run-unit statistics is also provided.

Prices range from \$15,300 to \$22,500.
► **Allen Systems Group**
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Unix

Computer Information Systems, Inc. has added Unix support to its RoboCharge software for OpenVMS resource accounting, chargeback and project accounting.

According to the company, the new Unix facility automatically accumulates Unix accounting file data, connect time data and disk storage data.

The collected data is posted to RoboCharge data files that are obtainable for image accounting, integrated OpenVMS/Unix resource accounting, chargeback, graphics and reporting.

Support is also provided for Unix project accounting. Users can enter, change and leave projects with the project accounting facility, according to the company.

CPU prices range from \$300 to \$8,000.
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ASK's Manman/X upgrade expands support, offers tools

By Melinda-Carol Ballou
MOUNTAIN VIEW, CALIF.

The ASK Group, Inc. unveiled Manman/X Release 2 manufacturing software earlier this month, which offers support for a greater range of platforms, along with a suite of development tools.

Manman/X Tools is a set of tools that allow users to customize applications. It is able to interoperate with other tools, such as ASK's Ingres Products Division's Ingres/Windows 4GL. In this way, users can develop applications that are complementary to Manman/X.

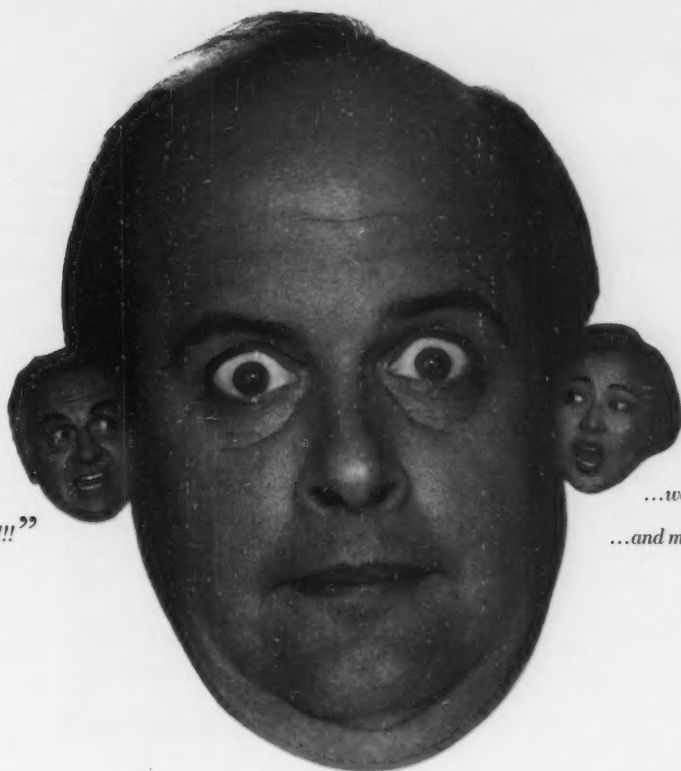
The Foundation, Customizer and Developer tools offer the following features: version control, a central data dictionary to specify fields for applications, a program generator for easy modification and prototyping of transaction-specific code and a modular approach to modify the application without changing source code.

Manman/X Release 2 will support Oracle Corp.'s Oracle relational database management system, Hewlett-Packard Co.'s MPE/IX and Digital Equipment Corp.'s OpenVMS and OSF/1 platforms on Alpha.

The new version also offers international fields to support the European Single Market requirements, along with currency checks and variances, manufacturing enhancements to optimize operations for repetitive manufacturers and extended inventory, engineering change order and finance controls. In addition, it now supports third-party products, including Interactive Software Systems, Inc.'s UDMS-ReportWriter, Paradigm implementation procedures and Sigforms.

Release 2 of Manman/X and the tools are due to ship in 60 days. Pricing starts at \$25,000 for an eight-user system.

Diagnosis: *Acute Demanditis*



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and make us competitive!!!"*

*"Listen, Ed...what
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...and make 'em easy to use!!!"*

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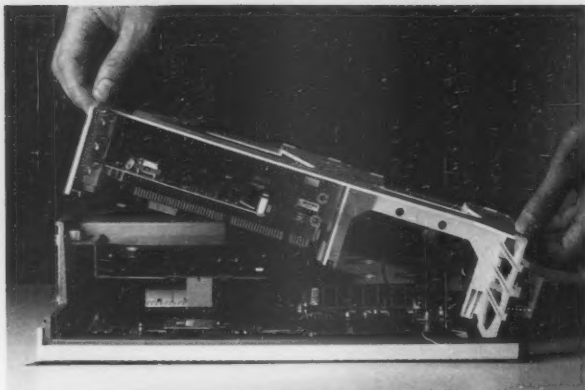


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Just push two buttons (you won't need an M.I.T. degree for this either), unplug two cables, and slide out your diskette drives for easy upgradeability or service. Or to add a tape drive or CD-ROM drive.



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Or if you want to get to your hard drive for easy maintenance or for an upgrade, just take out another screw, unplug two cables, and snap it out. So call us.



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all the cables, remove the expansion

cards, replace the expansion cards, then reconnect all the cables.

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'Stress test' for systems

By Gary H. Anthes

Ken Craiker, computer systems analyst at the Internal Revenue Service, outlined an application testing scenario that might strike some as a little farfetched: Get several hundred tax examiners to come in the middle of the night to sit at CICS terminals and enter test transactions.

Fortunately, the IRS did not have to test that scenario; instead, it installed Compuware Corp.'s CICS Playback and accomplished the same thing with four people.

Craiker said Playback—an automated testing tool for on-line applications—is helping the IRS convert its Automated Collection System from IBM 4300 mainframes running DOS/VSE to IBM Enterprise System/9000s running MVS at its 10 service centers. Playback is being used to "stress test" the local networks by simulating the action of hundreds of simultaneous CICS users.

"We wanted a product that would let us capture exactly what we've done in the old system, put it on the new system, run it again in the exact same way and then make a comparison," Craiker said.

Without a product like Playback—and ab-

Simulcast

After debugging and stress-testing applications using Compuware's Playback, users can employ the company's CICS Simulcast, a help desk and training tool. Simulcast enables:

- Troubleshooters to monitor a user's CICS session.
- Trainers to broadcast training sessions.
- On-line conferences among end users and systems personnel.

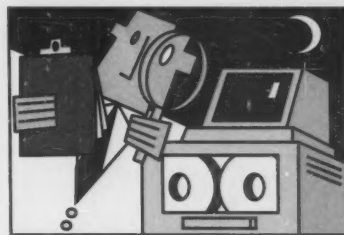
sent the midnight horde of tax examiners-turned-testers—the IRS would have had to resort to a "Mickey Mouse" approach consisting of a handful of systems people entering a dozen or so accounts each, Craiker said. Instead, the IRS can push through 20,000 to 50,000 test transactions at a time in a way that is relatively easy to monitor, repeat and control.

According to Farmington Hills, Mich.-based Compuware, Playback was designed especially for large applications that are difficult to rigorously test for production conditions prior to system implementation. For \$35,000 to \$106,000, depending on the host machine, Playback performs the following tasks:

- Builds realistic test cases by capturing actual transactions and related database and file activity.
- Executes repeatable tests in a simulated production environment. Avoids the need to rekey transactions and restore test databases between tests.
- Aids analysis of test results by flagging all screen and database differences.
- Documents test results.

Playback can be run in an unattended mode,

'Stress test,' page 75



Not just for testing

► Playback was designed to aid in testing on-line mainframe applications, but it can be put to broader use, said Rick Whitham, senior programmer/analyst at USA Group.

For example, it can capture and maintain user scripts for setting up a database or defining a printer, he said. "Our CICS guy automates some of the things he does, and then he plays them back interactively in a fill-in-the-blanks kind of way." The alternative had been to write the scripts on paper, which could never be found when needed.

Andersen gains object advantage

By Kim S. Nash
CHICAGO

■ Andersen Consulting's upgraded application development workbench—including object-oriented repository—pushes the firm ahead of other computer-aided software engineering (CASE) makers in the client/server race, observers said. But Andersen still has work to do, such as getting the workbench to run on platforms other than IBM's OS/2.

Andersen's Foundation for Cooperative Processing (FCP) Version 2.0, announced recently at DB/Expo '93, sports enhanced object-oriented features, including an improved local-area network-based repository. Designed to store and manipulate more complex objects than the previous version, the repository lets users create reusable objects from the business process level down to the level of individual data names.

Such a flexible, object-based repository is key for Daniel Spirek, senior business analyst at Comprecare Healthcare Services, Inc., a \$200 million health maintenance organization in Aurora, Colo.

Using the new product, the company was able to build a specialized customer survey application

"in no time and without lots of training," said Spirek, whose client/server baptism occurred five months ago when a beta-test version of FCP 2.0 arrived.

Comprecare spent 2,600 work-hours building a 12-user OS/2-based system for a task that used to be done manually, he said. The product let him design and generate the application "in far less time than it would have taken to hand-code," he said.

Moreover, users and analysts said, FCP 2.0 adeptly blends traditional CASE-style front-end planning and analysis tools with faster object-oriented aids. Other client/server tools, such as Powersoft Corp.'s PowerBuilder, lack analysis and design features.

Powersoft is addressing this issue by building links between PowerBuilder and front-end CASE modules, such as those from Bachman Information Systems, Inc., Popkin Software and Systems, Inc. and LBMS, Inc.

At the same time, traditional workbenches from KnowledgeWare, Inc., Texas Instruments, Inc. and other CASE makers lack fast, easy-to-use generators, unlike Andersen's product, observers said.

However, a potential stumbling block for Andersen is that FCP 2.0 runs only on OS/2, neglecting the fast-growing Microsoft Corp. Windows development tools market where PowerBuilder, for example, has gained momentum.

Still, FCP 2.0 goes further than many other CASE developer aids in terms of being able to generate for multiple platforms, which is critical to building client/server systems, said Judith Hurwitz, president of Hurwitz Consulting Group in Newton, Mass.

For example, FCP 2.0's ability to generate programs for Hewlett-Packard Co.'s HP/UX and Digital

Equipment Corp.'s Ultrix platforms is "an important first step" in getting into true multiplatform development, Hurwitz said.

Other enhancements in FCP 2.0, which is now shipping, include a Rapid Application Builder to prototype and error-check applications before building them. Support for IBM's AIX and DEC's OSF/1 is in the cards, according to Don Dall, managing director of the Foundation unit. He declined to give a time frame but added that Microsoft's Windows NT will come first, "in the very near future."

FCP 2.0 is a 'first step' to true multiplatform processing.

PC client/server tools gaining adherents

By Garry Ray
SAN FRANCISCO

Client/server reconnaissance was the mission for many visitors to DB/Expo '93.

There to assess the viability and progress of client/server technology, users with mainframe and minicomputer backgrounds said the 200-plus vendors that displayed client/server tools, utilities and databases were becoming better equipped to handle enterprise application development.

"The PC vendors are working up to enterprise computing with more serious application development tools," said Mark Fetherolf, a manager at consultancy Aston Brook in Plymouth Meeting, Pa. His company has increasingly been using PC-based development tools for its downsizing projects using Oracle Corp.'s Oracle database.

Fetherolf said the best tools were coming from PC-based tools suppliers, not from traditional mainframe suppliers. "The mainframe world didn't respond" quickly enough to downsizing trends, he said.

Other users remained cautious about PC-based client/server development tools.

"All of the primary vendors are saying, 'Don't do mission-critical systems today,' which we wouldn't do anyway," said Mark Jordan, a database administrator at Electronic Data Systems Corp. in Goleta, Calif.

Jordan said his goal was to determine "which client/server products are out there" for the anticipated downsizing of a Digital Equipment Corp. VAXcluster environment to as-yet-undetermined Unix systems. But Jordan said his search

PC client/server, page 75



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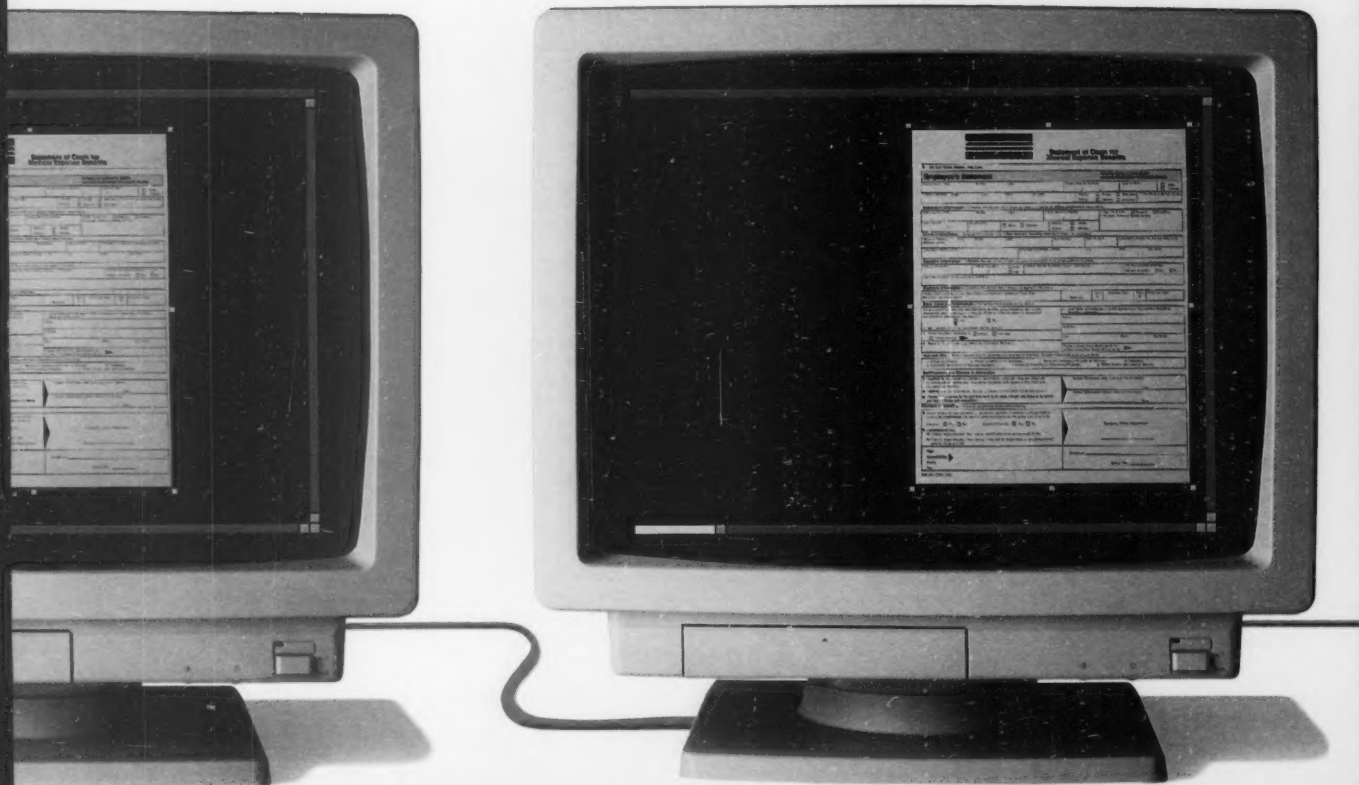
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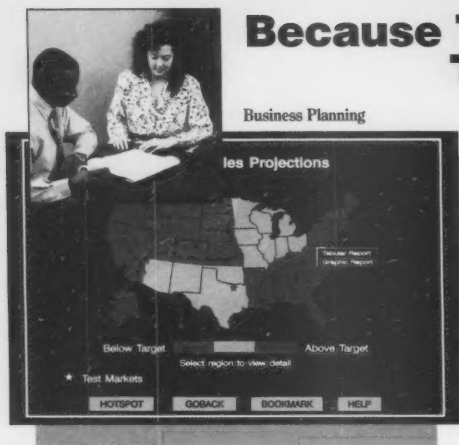
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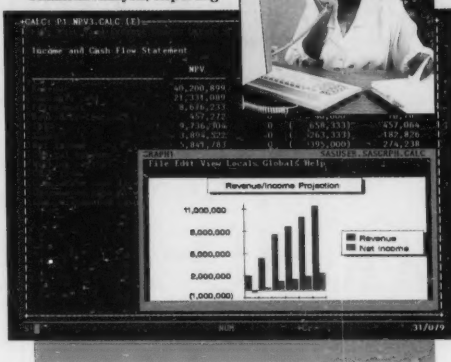
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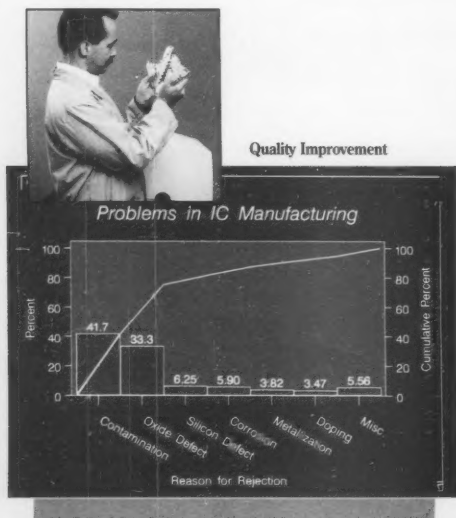
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Quality Improvement



Data Visualization

Jon Friedman

'Mission' ill-defined



I nominate "mission-critical" as one of the most dangerous phrases of 1993. To see why, let's take a short multiple choice quiz.

Question: When will Microsoft's Windows NT be ready for "mission-critical" applications?

- Answers:**
A. Now.
B. First-quarter 1994.
C. 1996.
D. Not in our lifetime.

I was asked recently to obtain expert views on exactly this question. By asking several knowledgeable people, I was cleverly able to narrow the responses down to A, B, C and D.

You can get exactly the same result if instead of "Windows NT" you say "client/server 4GLs," "Unix transaction monitors" or "object-oriented databases," among other emerging technologies.

Further probing revealed that many respondents had a fairly consistent timetable in mind for the maturation of Windows NT. The problem was with my original question. "Mission-critical" led different observers to think of different combinations of the following definitions:

1. **Important.** An application is "mission-critical" if it provides significant value to an organization. You can tell someone has this meaning in mind if he makes statements such as, "We'll be fired if this doesn't work."
2. **High-volume.** "Mission-critical" is sometimes equated with "big," as in supporting many people or a large number of transactions, sometimes with strict performance goals.

What kind of mission-critical do you mean?

3. **High-availability.** "Mission-critical" is frequently used when even a small amount of application downtime is very costly.

4. **Requiring high data integrity.** The accent is on "critical" for applications where the loss of even a single transaction is unacceptable.

An application can have one or more of these characteristics but not all of them. A decision-support application may be critical for a retailer, even if it is used by only a few people and occasionally suffers from an aborted query (criteria 1 and 4). An order-entry system might need to handle large volumes of data and be continuously available, but absolute data integrity might not be cost-justified (criteria 1, 2 and 3).

Note that if you are evaluating, say, software development tools, the requirements differ depending on the kind of "mission-critical" you mean.

"Important" applications call for tools that are functional and reasonably reliable and that deliver good development productivity. Tools for "high-volume" applications need to provide for tuning and efficient execution and must work with other elements of a high-volume environment — say, transaction monitors. High-availability systems must be built with explicit strategies for redundancy.

High data integrity applications require tools that can flawlessly provide facilities for backup, recovery and the end-to-end tracking of transactions.

Because no set of tools provides all of these things, it is important to make trade-offs based on the real application requirements. A general requirement of "mission-criticalness" blurs important distinctions.

What is the moral of this story? I don't suggest banishing the term "mission-critical" because it does serve as a useful shorthand for a set of related characteristics. However, it is dangerous to assume that someone else means the same thing you do when using the term. So just make sure that when someone is saying "mission-critical," he is referring to the mission that is critical for you.

Friedman is manager of industry and competitive analysis at Unisys Corp.

PC client/server

CONTINUED FROM PAGE 71

was not an easy one. "With so many vendors and products, it costs time and money tracking down the tools" for client/server development, he said.

Among the products cited by users as important to enterprise-wide client/server projects were the following:

- **Scientific and Engineering Software, Inc.** in Austin, Texas, unveiled its \$14,900 Client/Server Model for simulating client/server systems. A specialized front end to the company's SES/workbench, a general modeling and simulation environment, the Client/Server Model allows users to enter parameters for the computing devices, network topology, work loads and application behavior within a client/server system. Systems designers can then alter and refine the model to obtain maximum overall performance, a company spokesman said. Release is slated for late June.

- **Logix Works, Inc.** in Princeton, N.J., previewed its data modeling and database design tool, Erwin/ERX for Powerbuilder. The \$2,995 tool, which will be released this summer, will allow Powerbuilder developers to create entity-relationship diagrams from a variety of SQL databases. The models can then be used to generate Powerbuilder applications.

- **Cognos Corp.** in Burlington, Mass., announced Version 2.0 of its Impromptu query and reporting tool for Microsoft Corp.'s Windows. The \$595 Administrator Edi-

tion allows database administrators to create predefined "catalogs" of queries and joins for SQL databases and limit the number and types of records that users can retrieve. The \$395 Enterprise Edition allows users to perform database queries and create reports. Both versions are slated for release in August.

- **Information Builders, Inc.** outlined plans to link its EDA/SQL query tool with KnowledgeWare, Inc.'s Application Development Workbench (ADW). KnowledgeWare will build two links: Model/EDA, to let ADW users work with relational and nonrelational database models; and ADW/Construction Workstation-EDA, to let users generate applications using Information Builders' SQL messaging interface and business models built with ADW.

- **Trinzle Corp.** demonstrated Ai-on Development System and KBMS, products designed to create graphical, distributed applications that can access information stored on PCs, network servers or mainframes. Trinzle also showed InfoPump, a middleware product inherited from Channel Computing, which Trinzle bought earlier this year. InfoPump helps users move data between databases to ease the information flow in client/server systems.

- **Natural Language, Inc.** in Berkeley, Calif., said its ad hoc query tool Natural Language will support The ASK Group, Inc.'s Ingres ODBC Database Driver and Informix Software, Inc.'s Informix database management system.

West Coast correspondent Kim S. Nash contributed to this report.

'Stress test'

CONTINUED FROM PAGE 71

which is especially suited for long tests with high transaction rates. Or it can be set to run interactively, allowing testers to change transaction input and view output before processing the next transaction.

While the IRS uses Playback to stress test mostly debugged applications, USA Group, Inc. in Fishers, Ind., uses it further upstream in the development cycle to help the company find bugs in unit and systems tests.

USA Group has two huge MVS applications — for student-loan guaranteeing and student-loan servicing — written in Cobol and ADS/Online, using the IDMS database from the former Cullinet Software, Inc., now Computer Associates International, Inc. The applications and related subsystems are supported by about 300 developers at two locations, according to Rick Whitham, senior programmer/analyst.

"The ADS/Online debugging environment was virtually nonexistent, so we needed something to ease our testing burden," Whitham

said. Playback is used about equally for developing applications and for maintenance.

Whitham described the pre-Playback testing approach as one in which test cases were laboriously constructed, executed and re-executed, with test databases rebuilt each time. Now, test cases are saved by Playback so that whenever a program goes from production back into testing, the same proven tests can be applied again and results compared to earlier runs. Playback knocks about 50% off total testing time, he said.

A time saver

Keystone Insurance Co. in Philadelphia uses Playback for unit testing, systems testing, stress testing and maintenance of production systems. Al Daubert, assistant vice president for technical services, said it is most popular in unit testing because of the time it saves in reconstructing and repeating tests.

In maintenance, especially for critical programs, Keystone uses Playback to compare output screens before and after changes are made. "It's saved us some real embarrassments," Daubert said. "It's hard to stay out of trouble in this business, so you need all the help you can get."

Tool helps team development efforts

By Jean S. Bozman
FOSTER CITY, CALIF.

Blyth Software, Inc. said it will support collaborative programming with its new Omnis 7 Version 2.0 client/server application development tool for Apple Computer, Inc.'s Macintoshes and Microsoft Corp. Windows-based PCs.

The new Version 2.0, which includes a database and fourth-generation language tools, is set to ship this summer. As announced at DB/Expo '93 in San Francisco, the basic price is \$3,750. However, Blyth will sell it at an introductory price of \$3,000 until September. Upgrades from previous Omnis releases cost \$500 to \$2,250.

New features in Version 2.0 include a Version Control System that prevents programmers from writing over code written by oth-

ers in their development team. A Change Management System helps maintain applications after they have been written. Software modules written with the Omnis system are really a series of linked "objects" that can be sent over a network to update remote workstations, the company said.

Omnis 7 client/server applications can be deployed using Apple's Data Access Language and Microsoft's Open Database Connectivity application programming interface. Client applications can reach SQL data stored in relational databases from Oracle Corp., Sybase, Inc., Informix Software, Inc. and The ASK Group, Inc., as well as IBM's DB2 and Digital Equipment Corp.'s Rdb. The Omnis database can also serve as a local-area network relational database, according to Blyth.

Application Development

New Products

Application development tools

Lattice, Inc. has announced CodeProbe, an interactive source-level debugger for Lattice RPG on the PC.

According to the company, the product provides the same debugging power found in PC languages such as C and Pascal.

Debugging features include command-logging to create test scripts for repeating keystrokes, menus with mouse or accelerator keys support, cross-debugging support and independent display windows for simultaneously viewing field contents, indicator usage, source and CodeProbe commands.

The product runs under DOS 5.0 or higher and operates in extended memory.

Lattice CodeProbe for RPG costs \$350.

► Lattice

Suite A
3010 Woodcreek Drive
Downers Grove, Ill. 60515
(708) 769-4060

Integrated Systems, Inc. has added three extensions to the pSOSystem's C++ environment.

The Object Register is a specialized tool for embedded C++ systems and provides memory garbage-collection func-

tions. The C++ Source Code Explorer enables users to graphically display and edit call trees, display class inheritance structure and interact with other C++ development tools, the company said.

Support for Intel Corp.'s 80386 and 1486 microprocessors is also provided. Prices range from \$4,395 to \$4,750.

► Integrated Systems

3260 Jay St.
Santa Clara, Calif. 95054
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Staying on top of document imaging technology is critical for organizations seeking to use a global competitive weapon.



Jack Lacy
Chairman
International Information
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"Document imaging, defined as the storage, retrieval, and manipulation of images of documents, may well be the fastest growing sector of information technology today. Regardless of the system — single-user or enterprise-wide — document imaging transforms every organization that adopts it."

"The Computerworld White Paper on 'Enterprise-Wide Imaging' appeared in two IDG publications — Computerworld and its German counterpart, Computerwoche — to coincide with our 30th year and the IMC Conference in Berlin. Both the global event and the White Paper were a great success with the industry leaders who attended from 31 countries. We look forward to working with Computerworld, other IDG publications and the next White Paper on 'Workflow Technology' in 1993."

"IMC's mission is to educate IS management on how document imaging enables organizations to reshape the way they function and work. The Computerworld White Paper Program is helping us meet that objective by reaching key influencers in the international IS industry."



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Control Corp. has introduced the Developers Toolkit II, software productivity tools designed for users who want to integrate multiport serial boards with their DOS or Microsoft Corp. Windows-based software applications.

The Developers Toolkit II includes the Developers Libraries that offers library routines of proven code that can be accessed by the user via simple, high-level C language calls, the company reported.

Also included are on-board debugging capabilities that can be used with Borland International, Inc.'s Turbo Debugger, a Development Controller option and a programmers' reference manual.

All versions support synchronous serial communications and cost \$695 each.

► Control

2675 Patton Road
St. Paul, Minn. 55113
(612) 631-7654

Computer-aided software engineering

Evergreen CASE Tools, Inc. has introduced Version 4.0 of both EasyCASE Professional and EasyCASE Systems Designer, computer-aided software engineering tools for the PC.

EasyCASE Professional 4.0 supports a large selection of available structured methodologies for event, process or information modeling. The product includes an integrated data dictionary, an on-line methodology monitor for analysis and checking and a chart editor.

EasyCASE System Designer 4.0 has the same features as EasyCASE Professional plus an automatic database scheme generation for X Base and SQL and is available for MS-DOS and Microsoft Corp.'s Windows.

EasyCASE Professional 4.0 costs \$795, and EasyCASE System Designer costs \$1,195.

► Evergreen CASE Tools

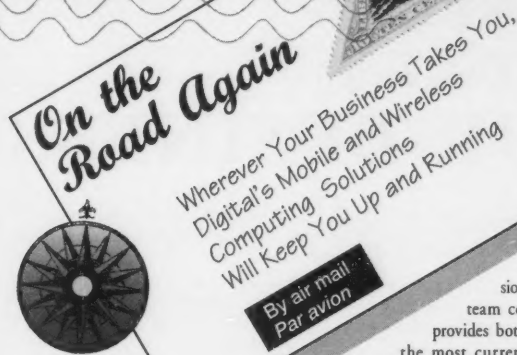
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BY JIM SLANE
BUSINESS MANAGER
MOBILE/WIRELESS GROUP
DIGITAL EQUIPMENT CORPORATION



Since 1975,

Digital has built a strong reputation for the design and manufacture of leadership network products. Almost 20 years later, we're using our networking and integration expertise to shape the future of business computing.

Today, our Networks Engineering Unit has set up a team focused on developing products and solutions for emerging and new network technologies in the areas of mobile and wireless networking, cable TV, public telecommunications data services, and multimedia. Working together, these technologies will allow you to work faster, smarter — and more competitively.

You will be able to access and exchange information no matter where you are — at home, in your office, on the road, across the country, or across the globe. This is Digital's vision. This is Digital's innovation at work — for you.

Working Toward True Computing Freedom

Imagine having the freedom to connect to your network from anywhere, anytime — and operate as if you were sitting in your "home" office.

• Perhaps you're a doctor accessing Patient A's records with your computing device. No need to go to the patient's bedside to find the chart. You can call for the information from wherever you are. In your office — or on the other side of the medical center.

• Or, you're a business professional working on a project with a colleague who is traveling across the country. A short time after you make some critical edits, she plugs in her laptop, hits a few keys, and receives the

latest updated version. This is true team computing that provides both of you with the most current data — no matter what your location.

• As a reporter, you're able to send information back to your editor in real time as an important interview progresses. Or, you can access a database that will furnish you with historical information as you formulate your next questions.

Mobile computing is here today — and here to stay — as the next paradigm of computing. In doubt? Look at the statistics. Almost 25 percent of all PCs sold worldwide today are laptops or notebooks. In Japan, that figure is greater than 50 percent. And, by 1996, notebooks and laptops are expected to outsell desktop PCs.

Unfortunately, what's not here today are the networking products to address the needs of mobile computing users. That's where Digital plays a critical role.

What You Should Know about Wireless Local Area Networks (LANs)

Today, companies are using wireless LANs for ad hoc workgroups, temporary locations, disaster recovery projects, or to overcome a facility's physical restrictions.

Whatever the reason, Digital understands that you are trusting your most critical applications to your wireless LAN. That's the reason why we insist on delivering wireless products that work as well as, if not better than, any wired network. We're accomplishing this goal through:

Spread Spectrum Technology

The radio frequency technology that Digital has chosen for its wireless LANs has a proven record of security and reliability. In

fact, Spread Spectrum technology was first developed by the U.S. government as a secure radio transmission methodology. In addition, Digital offers an encryption chip option — a pluggable option on the board itself for enhanced security.



In terms of safety, our wireless LAN product rates 17 times better than the ANSI radiation emissions standard.

No Licensing Hassles

Our choice of technology allows you to implement your wireless LAN without the need for FCC licensing.

No Costly or Time-Consuming Modifications

Of major concern to you may be the anticipated number of modifications to your current applications environment. No problem. Digital's wireless LAN products — based on the TCP/IP networking protocol — require no modifications to your computing infrastructure whatsoever. What's more, these products are all customer-installable — providing you with both savings and convenience.

Mobile Computing for a Wide Area Environment

It should be noted that the terms "wireless" and "mobile" are not synonymous. Wireless is a transmission medium that becomes an enabling technology for mobile computing. However, mobile computing — the concept of being able to connect to your network no matter where you are — does not necessarily dictate that you use wireless.

Once you begin to think about mobile computing for your wide area network (WAN) environment, there are specific issues to consider, including what type of transmission service to utilize. Your choices include telephone, cellular, and packet radio services, or some type of satellite offering. Whereas service costs are not a concern with wireless

LANs, they become important when considering wide area communications.

All the wide area services offered are tariffed based on the amount of time you're on the network or the number of packets you send across it. Digital is listening as you describe your need for the most cost-effective technology possible. To that end, we're designing products that will help you get the most out of your selected service.

An example is our plan to build products that allow you to operate your system in a disconnected fashion — right up until the time you need access. This style of computing utilizes the least amount of time or packets on the network, and ultimately results in cost savings for you.

When you're ready to get started, Digital's Professional Services Group will help you plan and design comprehensive mobile computing solutions to suit your business needs.

Today's Vision, Tomorrow's Reality

Today, Digital offers products to address many of the needs associated with wireless and mobile computing. These products, including wireless LANs and SLIP (Serial Line Interconnect Protocol) — a dial-up support for TCP/IP networks — are pieces of Digital's mobile computing mosaic.

Our strategy focuses on providing global connectivity for you and your business. That means addressing your needs at all levels — in the

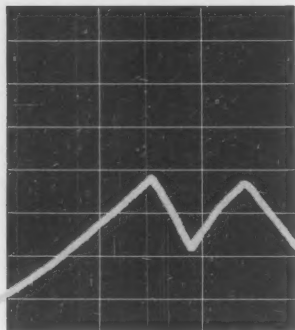
office, across town, across the country, or on the other side of the world. And, we plan to deliver mobile and wireless products based on a very aggressive schedule — providing you with one reliable source for all your mobile and wireless networking needs.

For more information on Digital's mobile and wireless computing solutions, call 800-332-4636 and reference ext. MOVE. ■

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Make Sure Your DSSI Storage Subsystem Is a Business Asset

Let Digital's Solid State Disk Help GROW YOUR BUSINESS

All the CPU power in the world can't provide the expected return on investment unless you add speed to your I/O. You need a better solution — Digital's EF5x family of solid state disks.

If your applications aren't running at optimal speed, you may need a boost in I/O. Digital's EF5x series of solid state disks — with prices as low as \$19,000 — can enhance your I/O throughput and allow your applications to bolster your bottom line.

To help you gain a better understanding of the benefits of Digital's family of solid state disks, we're offering answers to some of your most often asked questions.

Q. What types of symptoms indicate that my system is in need of solid state disk?

A. If application I/O demand exceeds the storage system's ability to respond, the system is I/O-bound. Key symptoms include long I/O queue lengths, prolonged user and batch response times, and low CPU utilization rates. Unacceptable application throughput also suggests an I/O-bound condition.

Q. How do I optimize the CPU power of my Digital Storage Systems Interconnect (DSSI) system?

A. To optimize CPU, your I/O subsystem's ability to provide data to your CPU must match your CPU power. Adding CPU power to fix your I/O problem isn't the answer. Adding a high-performance I/O device to fix an I/O problem is more cost-effective and offers better performance.

Q. Won't the throughput capability of solid state disks saturate my DSSI bus?

A. No. In the real world, the typical I/O throughput of a solid state disk is approximately 200 to 250 I/Os per second. It's the access time of 0.25 milliseconds that provides the real benefit. The I/O throughput realized is a function of the CPU type, application, and load. The lightning-fast access time of solid state disk — the time it takes to access frequently requested data — is what really matters. Solid state disk and magnetic disk can be mixed and matched on a single bus.

Q. How many EF5x solid state disks can I put on a DSSI bus?

A. The answer depends on a number of factors, including the number and types of host DSSI adapters and the request throughput performance goal. Approximately 200 I/Os to 600 megabytes can reside on a single bus. Approximately 1,400 I/Os to a 400-megabyte database should be spread across 2 buses. Spreading EF5x solid state disks across multiple buses to achieve load balancing can reduce queue lengths — allowing for improved overall response time.

Q. Can the EF5x solid state disk be integrated into a broad range of systems?

A. Yes. In fact, its plug-and-play ability as well as its size (the EF5x solid state disk fits in the palm of your hand) allows this solid

state disk to be easily integrated into systems in a number of ways, including integration into VAX 4000 cabinets and storage expansion boxes, and into SF storage array cabinets. This solid state disk can also be imbedded in VAX 7000 and VAX 10000 system cabinets.

In addition to integration flexibility, the EF5x solid state disk demonstrates dramatic performance features, including an integrated Data Retention System that allows for safe, secure, nonvolatile storage if power is lost.

To order any of Digital's solid state disks, call 800-DIGITAL (800-344-4825) and press 1. ■

Order #	Product	Price
EF51R-AA*AF**	107 MB DSSI solid state disk with integrated Data Retention System	\$19,000
EF51R-LA**	Two 107 MB solid state disks and modular mounting shelf for VAX 7000 and VAX 10000 systems	\$33,250
EF52R-AA*AF**	205 MB solid state disk with integrated Data Retention System	\$32,000
EF52R-LA**	Two 205 MB solid state disks and modular mounting shelf for VAX 7000 and VAX 10000 systems	\$56,000
EF53R-AA*AF**	267 MB DSSI solid state disk (no Data Retention System)	\$35,000

*Factory-installed option

**Field-installed option

MSDS EASI Access: The Document Management Solution for Regulatory Compliance

Managing hazardous materials documentation to keep pace with federal and state regulatory requirements is becoming increasingly burdensome — especially in manufacturing. The paperwork involved is staggering, and the trend is toward more regulation and reporting, not less.

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With MSDS EASI Access, personnel in Environmental Health & Safety, Operations, and in Maintenance can:

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- Manage MSDS information centrally
- Respond to emergencies with simple, comprehensive tools.

The MSDS EASI Access basic system enables you to convert paper-based material safety data sheets into a standardized image format and store them for electronic distribution, viewing, annotation, and management. For example, each MSDS can be filed by its trade name, CAS number, chemical name, manufacturer, or any other identifier. You can add a location marker to indicate where hazardous materials are in use at your site. Plus, other workstation or PC users on the network can find the MSDS information they need and print it locally from a single, centrally managed source.

For more information on the MSDS EASI Access solution, call EA Systems, Inc. at (510) 748-4753. ■

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Begin 21st Century Application Development Today — With PowerHouse and Alpha AXP

If you're looking for the fast route

to the future of application development, the search is over. Cognos, Inc. is now shipping its PowerHouse 4GL application on Digital's Alpha AXP platform. It's the first 4GL with native-mode availability to ship on Alpha AXP and OpenVMS systems. In short, the most widely used 4GL in the Digital marketplace is now better than ever — running on the world's fastest microprocessor.

"Our Alpha AXP strategy is part of the Cognos commitment to provide powerful solutions to Digital users and our VARs who have written applications in PowerHouse," says Ron Zamboni, president and COO of Cognos, Inc. "This commitment has made us one of Digital's largest COHESION solution providers. We're also fully committed to support Digital's strategic direction with Alpha AXP, DEC OSF/1, and Windows NT platforms."

Whether you choose to move to the Alpha AXP platform today or tomorrow, change all your systems or just a few, the flexibility and compatibility of PowerHouse can help you succeed.

"We went the extra mile, ensuring that PowerHouse applications are completely binary compatible between VAX systems and Alpha AXP systems," Zamboni explains. "Customers can build applications on the VAX system today and run them on an Alpha AXP system later. Or, they can use the power and speed of Alpha AXP systems to develop applications of the future right now."

Cognos/Digital Solutions Get Rave Reviews from Customers

PowerHouse applications have already been ported to the Alpha AXP platform — with positive results for Cognos' value-added resellers and customers alike.

"Digital and Cognos made it possible for us to take advantage of the latest in technology without changing a single line of code," says Brian Deppe, vice president of Technology, StarGarden Corporation. "For us, the move to OpenVMS on Alpha AXP was very simple."

Lou Anne Strickland, VAS Software president, explains that "with PowerHouse on Alpha AXP, we can now offer our customers VAS financial packages running on a very powerful alternative within the Digital family."

For the Marketrive Company, the porting of its MarketrivePlus marketing and sales automation system was completed with ease. "The process couldn't have been more straightforward thanks to Cognos and Digital," says company president Edward Lucia. "This opens up a new market for our PowerHouse-based software and lets Marketrive get in on the ground floor."

For information on PowerHouse, the StarGarden Human Resources Information System, VAS Software financial packages, or the MarketrivePlus marketing and sales automation system, call 800-4COGNOS (800-426-4667), ext. 81. ■

"Digital and Cognos made it possible for us to take advantage of the latest in technology without changing a single

line of code."

**Brian Deppe
Vice President of Technology
StarGarden Corporation**

In the Market for Cognos Software? Call Your Digital Authorized Distributor

Your software purchasing channels are better than ever. Now you can buy PowerHouse and other Cognos software products from Digital's largest authorized distributors. These include Avnet Computer, Pioneer Standard, Pioneer Technologies, and Wyle Laboratories.

According to Terry Hall, Cognos' senior vice president of Worldwide Sales, these distributors will help to increase the availability of quality software like PowerHouse. And that's good news for customers. "With the expansion of our

sales channels, we're making it as easy as possible for customers to purchase Cognos products," Hall explains.

To find out about ordering Cognos products, call one of these Digital Authorized Distributors:

Avnet Computer 800-426-7999
Pioneer Standard Electronics 800-874-6633
Pioneer Technologies Group 800-227-1693
Wyle Laboratories 800-289-9953

Get Ready for Savings on Alpha-ready VAX Upgrades and Software Applications

The pathway to your business future just got brighter with price break offers extending through July 2, 1993, on Digital's Alpha-ready VAX 6000 in-cabinet upgrades and Easy VAX Upgrade packages. You can get a guaranteed Alpha AXP price with your upgrade and savings on selected software applications.

Digital is offering the lowest prices to date on in-cabinet upgrades for the VAX 6000 system — by packaging CPU and memory together and pricing them for value.

You'll get a fast VAX 6000 Model 600 system — an Alpha-ready VAX system that offers more performance now and can be traded for a DEC 7000 Model 600 AXP system. You can even lock in an Alpha AXP upgrade price now and purchase the system later. And, when you order software with your upgrade, you'll receive 50 percent off on Digital layered products — upgrades or new products.

The new Easy VAX Upgrade program enables you to upgrade your older VAX systems to Alpha-ready VAX 4000, VAX 7000, or VAX 10000 systems. You can also upgrade or purchase new Digital layered products at a 50 percent discount and receive up to 15 percent off selected disk, tape, and memory products. You can even trade in additional systems to be applied toward the purchase of your new Alpha-ready VAX system. In addition, take advantage of 20 percent savings on applications from selected Digital partners such as Cognos when you upgrade. The list of software partners participating is growing daily and includes:

Software Partner	Application
Argent, Inc.	DCLFAST, DiskSaver, SUZIE, FileChief, JAMS
Cincom Systems, Inc.	SUPRA SERVER*, AD/Advantage*
Cognos, Inc.	PowerHouse 4GL, Architect**, InQuizitive**, PowerPlay**, Impromptu**
Cortex Corporation	CorVision
Dun & Bradstreet	Millennium series
EA Systems	PASCE, Re:Solution
EEC Systems, Inc.	SUPERCACHE
Executive Software	Diskeeper/Plus, I/O Express
Information Builders, Inc.	FOCUS 4GL (new orders only)
Ross Systems, Inc.	Renaissance Series, Renaissance CS Series, PROMIX, Human Resources, Tools
Smartstar Corporation	SmartStar VMS, SmartStar Vision
Target Systems Corporation	TARGET>HOTLINE, TARGET>ASSET TRACKING, TARGET>BATCH, TARGET>SENTINEL, TARGET>MENU

* Cincom has already reduced the prices of their complete family of products by up to 38 percent.

** When purchased with a PowerHouse 4GL license

To find out if the application you want is available — and for details on this limited-time upgrade sale — call 800-DIGITAL (800-344-4825) and press 2.

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Digital's Alpha AXP Workstation Companion Solutions

Serving Up OUTRAGEOUS POWER at INCREDIBLE VALUE

What's the idea behind Digital's Alpha AXP Workstation Companion solutions? It's simple. You want to extend the availability of your primary applications to a broad base of users. And you need a cost-effective approach. The answer? Add Digital's Alpha AXP workstations and VXT 2000+ X Window terminals to your computing environment.

The teaming of Alpha AXP systems with our VXT 2000+ X Window terminals brings the power and performance of the Alpha AXP platform to your desktop users at a fraction of the cost of other workstations. And, you get the same windowing capabilities and presentation.

All the Advantages of GUI Computing — for Less

Your business may run a number of graphical user interface (GUI) applications, such as publishing, process planning, statistical analysis,

and low-end CAD/CAM applications — the kinds of applications that don't require the dedicated processing power of a workstation. The

most cost-effective way to take advantage of GUI computing at a low cost per seat is to distribute system computing power via a networked display device, an X Window terminal.

Digital's Alpha AXP workstations are high-performance plat-

forms for graphics applications — providing excellent responsiveness to users. In fact, the combination of Alpha AXP systems and VXT 2000+ X Window terminals provides you with:

- High user productivity
- Highly responsive applications
- Freedom from user system management tasks
- Simplified system management
- Low cost per seat

ALPHA AXP SYSTEMS, COUPLED WITH DIGITAL'S VXT 2000+ X WINDOW TERMINALS, ENABLE YOU TO ACCESS THE POWER OF DIGITAL'S 64-BIT RISC TECHNOLOGY — AT THE LOWEST PRICE PER SEAT IN THE INDUSTRY FOR A MULTIWINDOW DEVICE.

- Data security
- Growth paths.

And now, Alpha AXP Workstation Companion bundled packages are easier than ever to order. One phone call and one order number are all it takes. Each package includes:

- DEC 3000 Model 300 (or 300L) AXP workstation with monitor, 32 MB memory, 1.05 GB disk, and CD reader

- Two VXT 2000+ X Window Terminals, each with 10 MB memory, standard keyboard, and VXT 2000+ terminal software license
- VXT 2000+ software kit
- Twisted pair to ThinWire Ethernet Adapter
- DEC OSF/1 AXP or OpenVMS AXP 3-user license and software.

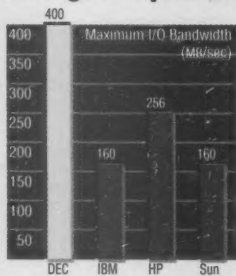
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How are we doing?

Sure, it's dangerous to invite users to complain about IS. But SmithKline, American Express and Texas Instruments say that polling users is well worth the risk.



▲ SmithKline Beecham's Katherine Holland: User polls are invaluable in keeping IS tuned in to what's happening in the trenches. '[They've] helped us get our hands around intangible comments.'

By Michael L. Sullivan-Trainor

MOST USER SATISFACTION SURVEYS might as well be thrown away (and often are) by the very people they're supposed to help. That's because surveys usually fail to stimulate change.

The problem, says Richard S. Mathews, president of Mathews & Co., a customer satisfaction consultancy in Stamford, Conn., is that it's often tough to turn user feedback into improved service. Lack of top management commitment and the absence of measurable goals, Mathews says, are major obstacles.

Yet experts say that without a thorough survey program, information systems managers — especially those in centralized IS groups — are flying blind. Besides making you vulnerable to complaints about poor service, a lack of solid user feedback can also cripple or even scuttle efforts such as business process redesign and total quality management, which de-

pend on user feedback and participation.

Even so, skepticism about the value of user surveys runs deep. Robert Gilmore, executive vice president at CoreStates Financial Corp., sums up a common sentiment: "If you have to ask the users what they think of your services, you're not working closely enough with them."

Another hindrance is fear of risk. No question: It's dangerous to invite users to vent complaints about IS. Especially when feedback is reported to senior management, who can press, often uncomfortably, for corrective action.

Alan Kornbluth, a vice president in the IS group at American Express Co.'s headquarters in New York, affirms that asking people to rate your services can be a frightening experience. "[It is] like coming home from school again with your report

Satisfaction surveys, page 82

user
SURVEYS
that
SATISFY

Satisfaction surveys

CONTINUED FROM PAGE 81

card," he says.

Overexposure and apathy are also problems, says Naomi Karten, president of Karten Associates, an IS management consultancy based in Randolph, Mass. "People have been surveyed to death," she says, noting that often "users have no stake in the responses because they never hear about them again."

Plus, many surveys are poorly designed, which leads to misinterpretation and misguided action, Karten adds.

Then there's another harsh reality: Problems unearthed by surveys might not be that easy to fix. With all the pressure these days to cut costs and re-engineer, understandably few IS managers are interested in

inviting more attention to weak areas.

So it's no surprise that IS managers who survey users regularly are pretty rare. When studies are conducted, they are usually in response to crisis situations or major changes in organization or technology.

For IS managers willing to risk the consequences, advocates say end-user surveys can do the following:

- **Rally IS staffs.** Supporters say survey feedback can really illuminate and animate an insulated IS staff.

When quantifiable complaints from a large number of users grab the attention of senior management, even the most self-contented, phlegmatic

Create a nervy survey

So you've decided to try surveying your end users. Experienced hands say it's critical to carefully design your satisfaction survey if it is to be of any value. Experts recommend that you do the following:

- Focus on what's important to the customer/user. Aim at the services he cares about most.
- Thoroughly prepare for the survey as a service improvement process, not just a survey exercise.
- Measure results accurately and carefully. Then benchmark against other internal and external measures.
- Develop and execute plans to address problem areas as quickly as possible, and communicate with users about them.
- Re-engineer processes as necessary. Nothing is unchangeable; some things might just take more time than others.

IS staffs can suddenly become focused on solving the problems.

- **Prevent surprises.** In an atmosphere of change, top management often wants to examine every service and function to ensure that it's in sync with company goals. If IS isn't ready for such heavy-duty scrutiny,

outsourcing or staff downsizing can easily rise to the top of the executive agenda.

Katherine Holland, director at SmithKline Beecham's U.S. Technology Services, says user polls can be valuable in helping IS stay tuned in to what's happening in the trenches.

Surveying, she says, "helped us get our hands around intan-

gible comments from the business unit programmers."

As part of a self-evaluation strategy, backers say, surveys can provide fast (and convincing) answers to top management's questions about how well IS is supporting the organization's mission.

- **Improve services.** With the right techniques, IS managers and consultants say, it's possible to determine how to further improve user satisfaction, achieve peak performance and prevent IS complacency.

At Texas Instruments, Inc., for example, Gary Pollard, director of quality for IS, says surveying "really helped us focus our efforts on problems to get corrective action."

Following are accounts of how some world-class companies have used end-user surveys to achieve high levels of user satisfaction.

SmithKline Beecham

Hoping to prevent yourself from being replaced by an outsourcer? Trying to gain control of a changing picture? Need to assess the effects of a major reorganization?

Any one of these would be sufficient cause to consider launching a user satisfaction survey. Katherine Holland is facing all three—at once.

To meet these triple challenges, she's employing several types of self-evaluation tools in hopes of gaining valuable information for action. But there's a twist: Instead of concentrating on users, she's surveying IS staff members themselves.

"The programmers are our harshest critics because of reorganizations that have taken place," Holland explains.

The first major step was to poll some 186 application programmers who report to business units and serve as intermediaries for the data center's end-user customers.

The center, located in King of Prussia, Pa., runs the company's entire applications portfolio, from companywide financial systems to clinical, pharmaceutical and consumer brands systems.

Consolidation issues arise

The reorganization began two years ago, when SmithKline's merger with UK-based Beecham led to the consolidation of four data centers into one. Staff was halved, and a single IBM Enterprise System/9000 Model 900 replaced four IBM 3081s and one 3090 Model 200.

Although Holland says price/performance improved, a funny thing happened during consolidation: The ES/9000

was partitioned into four areas, each with a different operating system and applications to match the company's four businesses.

But it turned out that programmers were unhappy because each business unit no longer had its own data center. Holland explains: "We still run [the center] as if it were four data centers with four different staffs. We've accomplished the physical consolidation. Now we're working on the logical consolidation."

All this was going on while processing volume (measured by increased business systems to support new product and services) grew between 30% and 40%.

Holland wanted to know how the consolidated data center was doing, so she initiated a multipart self-survey.

A comparative benchmarking study was conducted by Compass America to determine

where SmithKline stood against similarly sized companies in key purchasing, staffing, processing and management areas.

This was coupled with an "operational readiness study" done by IBM's outsourcing unit, Integrated Systems Solutions Corp. (ISSC), to see what an outsourcer would improve if the services were turned over to one.

Also, a programmer satisfaction survey was conducted to corral some of the intangible concerns and determine how much was based on current service.

The benchmark comparisons documented what Holland already knew: "We were paying a higher price for CPU utilization than our demand said we should."

The reason was that each of the four different environments had its own operations personnel and direct-access storage devices backup.

Consultant adds credibility

Holland says she believes that calling in an outsourcer lent further credibility to the efforts, even though SmithKline had already decided to keep processing in-house. Nonetheless, Holland says the ISSC evaluation provided some insurance in case the plan changed, as well as further ammunition to advance data center consolidation.

As it turned out, the satisfaction survey was a major piece of the program. That's because the poll targeted the data center's performance on business needs and applications, rather than examining

only internal efficiency measures. The bottom line: Programmers were quite satisfied with data center services.

Another interesting finding was that a particular account representative was disliked by programmers in his unit. So Holland replaced the problem person with a manager who "smothered the unit with attention."

The new approach worked, and the group's satisfaction ratings increased.

Eventually, Holland was able to use the survey data to garner management approval to start a common operating environment for all the business areas. This in turn ultimately helped reduce data center costs even further. Today, follow-up surveys are conducted annually by outside consultants.

"There's still a lot of politics and dynamics," Holland says. "But the results validated what we were doing."

Holland says the ISSC evaluation provided some insurance in case the plan changed.



SmithKline Beecham

- **Goal:** To improve control and assess effects of major corporate reorganization in midst of 30% to 40% annual processing growth.
- **What they did:** Mixed evaluations by Compass America and ISSC with internal survey of business unit application programmers.
- **Payoff:** Company management OK'd establishment of common operating environment to reduce data center costs.

"There's still a lot of politics and dynamics, but the results validated what we were doing."

Katherine Holland, director of U.S. Technology Services

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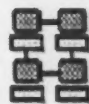
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We'd Like To Puncture A Few Myths About Commercial Parallel Processing.

MYTH #1 Parallel processing is a promising technology, but not yet a deliverable business solution.

FACT Some of the world's most successful companies have been using our parallel processing systems to extend their business leadership.

Commercial parallel processing is the natural successor to today's mainframe applications. We've been perfecting and delivering the technology for almost ten years. Helping hundreds of customers around the world tap multi-million dollar profits formerly hidden in their enterprise.

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MYTH #2 Parallel processing has no practical commercial applications that mainframes can't handle.

FACT Conventional mainframes don't have the power to extract the information you need to succeed from the sea of data your enterprise produces.

Your enterprise generates an enormous amount of data every day. Yet without a way to turn that data into actionable information, your enterprise may quickly lose share to more aggressive, better informed competitors. The NCR System 3600 and DBC/1012 can help you get the information you need to survive and succeed. Using hundreds of microprocessors working

together to accomplish in minutes tasks that would take a conventional mainframe many hours to process serially. Assuming that today's mainframes could do the work in the first place.

Our machines are easily scalable, so you can put the power you need where you need it. And they're designed to cooperate with your legacy systems, extending your current IS investment.

MYTH #3 Commercial parallel processing needs Ph.D.s to run it.

FACT Your current programmers can write relational database applications for our machines the way they've always written them.

Our system software makes the task of programming for parallelism transparent to your IS staff. So there's no applications bottleneck or expense associated with retraining. You can start realizing the benefits of greatly increased processing power quickly.

MYTH #4 Commercial parallel processing is too expensive.

FACT Because our systems are based on hundreds of relatively inexpensive, industry-standard microprocessors, we can price them very affordably.

Our parallel processing systems are very competitively priced. And when you consider the value of obtaining mission-critical information you can't get any other way, your potential ROI is exceptional.

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An AT&T Company

American Express Co.

Imagine being handed responsibility for providing IS services to 700 people at the parent company of one of the world's largest financial services firms. Now imagine asking those people what they think of you and your IS team.

If just the *thought* of this makes you nervous, think how Alan Kornbluth felt when he actually *lived* this experience at American Express.

When he came on board two years ago, Kornbluth knew it would be important to determine how satisfied users had been with the former IS group. He figured a survey would help target his group's efforts to improve services.

So, aided by Mathews & Co., he initiated a series of user satisfaction surveys. The firm also employed a benchmark that compared Amex's results to those collected from other large companies.

All 700 data center clients were surveyed. The survey was administered to all departments, with extra lobbying by Kornbluth to get the opinions of key executives. Users rated accuracy, distribution, timeliness and quality of services such as report generation, as well as other key areas such as on-line availability, response time, system support, problem resolution and attitude. Some 30% of those polled responded.

Kornbluth says the survey met his goals and provided two other major benefits. The first, he says, was expect-

ed: showing top management that his staffers were doing a good job in the eyes of users and illustrating that they were operating on a "world-class" level compared with other companies.

The second benefit Kornbluth says he didn't expect: better IS staff "buy-in" for addressing user concerns.

The process started with IS completing the same survey as users. Kornbluth then presented user and IS survey results to his own staff. "The customers didn't care where the problem was, but they were seeing it as an IS problem, and IS wasn't seeing it that way," he says. Some differences were striking.

Avoiding finger-pointing

For example, data center staffers believed they were producing reports on time. But users didn't think they were getting the reports very quickly. The discrepancy prompted Kornbluth to investigate, and he discovered that the courier service that delivered the hard-copy reports to various buildings and offices was dropping the ball, but IS was getting blamed.

Rather than let the problem deteriorate into finger-pointing, Kornbluth used the example to underscore a key point: IS is responsible for user satisfaction during the whole process, not just its own piece.

There were other surprises. Users and IS, for example, also had very different

The survey showed top management that IS staffers were doing a good job in users' eyes.

American Express

- **Goal:** To gauge satisfaction with previous IS group and better focus efforts to improve service.
- **What they did:** Surveyed 700 users with customized forms, then compared results with those of other large companies.
- **Payoff:** Was able to show company management that users were happy with 'world-class' IS group; better IS 'buy-in' in addressing user concerns.

Asking people to rate our services 'was like coming home from school again with your report card.'

Alan Kornbluth, vice president, IS group

views of average response times. Users were unhappy with the wait required for certain applications, but IS felt response times were acceptable and so did not make that concern a priority.

Another example was that although IS knew the PC support center was understaffed, the survey helped identify just how understaffed it was. By gauging the strength of user feelings on the issue, Kornbluth says, his staff was able to direct attention to the most critical areas.

"We have a lot of balls in the air, and we know how hard we're working," he

says. "The survey is a good tool that lets you know the balls that get dropped."

Besides the concrete payoffs he's enjoyed, there are other, less tangible payoffs to surveying, Kornbluth adds.

Perhaps the most important, he says, is how the survey can help manage user expectations. "That's very important because the expectations are getting higher all the time," he concludes.

"If IS looks around and says, 'I did my job' and they have unhappy customers, then they haven't done their job," Kornbluth said.

Texas Instruments, Inc.

As useful as American Express' and SmithKline's satisfaction surveys were, they fell short in one important area: revealing key spots on which IS could focus to achieve the highest user satisfaction.

By and large, these other surveys confirmed what managers already knew: Users were less satisfied with weak IS

services. In most cases, the only surprise was how the units compared with those at other companies.

To go one level deeper, Gary Pollard, director of quality for IS at Texas Instruments, uses an alternate survey approach to pinpoint where his organization can make the greatest improvements. The method was developed by Gordon S. Black Corp. after a variety of

homegrown surveys failed to provide the information managers needed.

"We weren't making significant improvements," Pollard says. "The managers didn't have confidence in the results. We were seeing the gaps between users and IS areas, but we didn't know what caused the greatest dissatisfaction."

To avoid this focus on "gap analysis," Pollard distributed a survey to 22,000 users across TI worldwide. The 6,000 responses yielded quantifiable information about where IS should focus.

As expected, Pollard says, weaknesses in documentation and training became apparent. He continued: "But as an engineering company, our bias is to give users every bell and whistle we can think of. We didn't think we would have to work on functionality, but that's what the users wanted." In fact, increased application functionality was cited as the most important improvement users desired.

Next step: Teamwork

As a result of the survey, an IS "corrective action team" was assembled. This team met with each manager to find out what could be done to improve functionality. In many cases, users identified the main problem as missing functions. Others complained about poor ease of use. So IS management moved to have functionality-boosting projects pushed to the front of project backlogs.

Pollard notes that a big factor in the

survey success was strong support from John White, chief executive officer of TI's information technology groups, and Chief Information Officer Ralph Szygenda, who heads IS. The teamwork doesn't end there: A human factors team from another TI division has been brought in to consult with IS to improve application usability.

"The use of a consultant and top management attention," Pollard says, "raised the credibility of the survey results and the importance of addressing user requests."

Good technique also helped. For starters, users were asked directly about their problems. Then analysts used a regression analysis that allowed problems and categories to be compared using an "impact index."

Despite the careful planning, Pollard says, there was still resistance. "Some managers felt we would be asking for lower ratings because we were telling users to look for problems. Others said it wasn't good public relations to tell users we know they've had problems with IS."

But ultimately, the proof was in the pudding: The direct approach method surfaced problems in areas in which IS felt it was strongest.

And that reality, Pollard says, helped some to come to the important realization that continual improvement, not a fixed view of the world, is the only way to make end users truly happy. *



Texas Instruments

- **Goal:** To pinpoint highest payoff areas for IS improvement.
- **What they did:** Enlisted management support for custom poll of 22,000 worldwide users; aligned with human resources.
- **Payoff:** Identified better application functionality as top factor in user satisfaction; formed 'corrective action team.'

'[Opponents] said it wasn't good public relations to tell users we know they've had problems with IS.'

Gary Pollard, director of quality for IS

Feds take ride on outsourcing express

By Gary H. Anthes
WASHINGTON, D.C.

Like the private sector, federal government agencies have discovered the rewards and heartaches of outsourcing. But a recent study shows that the government has a different set of challenges and priorities when it seeks help in developing or operating information systems.

Professional staff shortages top the government's list of reasons to outsource, according to a report from the Information Technology Association of America (ITAA) in Arlington, Va., which in turn cited a survey of federal agencies by Input in Vienna, Va. Lowering IS costs, often cited in the private sector as the first reason to go outside, ranked No. 4 on Uncle Sam's list.

"In the private sector, the top three reasons for outsourcing are cost containment, cost containment and cost containment," said Susan McGarry, a vice president at The Yankee Group in Boston. A recent Yankee Group survey of companies that had outsourced listed "control of IS costs" as the No. 1 reason for outsourcing, followed by "to accomplish change" and "to get expertise."

Olga Grkavac, vice president of the systems integration division at ITAA, challenged surveys showing that commercial enterprises rank cost savings as the top reason for outsourcing. "Outsourcing is now done for strategic mission goals because cost-savings can be

very temporary," she said. "We think outsourcing is now really more successful when done for strategic purposes."

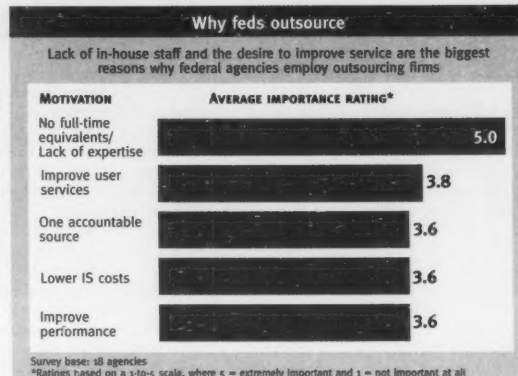
Federal agencies do not have to cope with pressure from a profit-and-loss statement, but they have other challenges. According to the ITAA, hiring ceilings may force an agency to use its best talent on work otherwise more appropriate for less skilled staff. "By constantly back-filling for its technical talent requirements, the agency runs the risk of achieving slower . . . progress in more mission-critical areas," the association's Federal Systems Integration Committee wrote in its report.

Bill Dvoranchik, president of the government services business unit at Electronic Data Systems Corp., said agencies are smart not to see outsourcing as primarily a way to cut costs. "When we have a government buyer who's buying low-bid [rather than best-value], they are focused on the wrong issues," he said.

At your service

Government managers are more concerned with offering the public better service, Dvoranchik explained. "In government, you won't lose your job if you overspend your budget; you can always roll that into next year's budget." He said outsourcing also appeals to the risk-averse federal IS manager who can take credit when it works but blame a contractor when it does not.

In the face of ever-shortening technology life cycles, protracted government procurements



mean agencies risk buying outdated technology, Dvoranchik said. "By outsourcing, instead of saying you want to buy this or that box, you can say you want a desktop solution, and you can put the risk into the private sector."

Outsourcing is becoming more common in government, according to Grkavac. "It is more in keeping with government of the 1990s. The government is looking for better ways to deliver services, and it is focusing more on things that only government can do, just as commercial firms outsource those things that someone else can do better."

Other reasons

Also cited as reasons for outsourcing in the ITAA report:

- Improve organizational flexibility.
- Reduce development time.
- Enforce standards.
- Improve user control.

Executive

Track

Former United Airlines information systems executive **J. Donald Karmazin** is the new vice president of IS at The Chicago Board of Trade.

Karmazin, who has headed United's IS department for the past 12 years and spearheaded the airline's strategic application of information technology, will be responsible for all trade board management information functions.

Robert K. Ramsden has been named senior vice president and chief information officer at Saks Fifth Avenue in New York. Ramsden, who formerly served as vice president of worldwide systems at Burger King Corp., will be the first person to hold the newly created position. His responsibilities include all of Saks Fifth Avenue's information systems and technical services.

Five new international officers will be in place at the Association for Systems Managers (ASM) as of June 1. Heading the 5,000-member Cleveland-based association as president will be **William D. Munch**, an IS consultant in Pleasant Hill, Calif. **Ross Flaherty**, Texas

Wesleyan University's director of IS resources, will step into the role of president-elect. He is slated to assume the top spot on June 1, 1994. **Ann Purrr**, manager of systems and information processing at LOMA in Atlanta is the ASM's new vice president.

The association's new treasurer and secretary, respectively, are **Martha Butler**, L. L. Bean, Inc.'s information technology planner, and **Michael Fisher**, manager at Indianapolis consultancy Technology Management, Inc.

Fleet Finance, Inc. in Atlanta recently created a vice president of systems support post and brought **Mark Roland** on board to fill it. Roland, who formerly served as vice president of operations at San Diego-based Security Pacific Financial Services Corp., oversees his new firm's on-line accounting systems and technical operations.

Charles W. Snodgrass is now serving as European business executive of The Chase Manhattan Bank NA's global cash management division. A former Electronic Data Systems Corp. executive, Snodgrass heads a Chase operation responsible for all of the bank's cross-border cash and treasury management products, multicurrency clearing, payments and information services in Europe.

Calendar

MAY 30-JUNE 5

Usatech '93. Caracas, Venezuela, June 1-5 — Contact: International Exhibitions, Inc., Houston, Texas (713) 529-1480.

Joint Application Design User Conference. Hershey, Pa., June 2-4 — Contact: Anthony Crawford and Associates, Oakville, Ontario (416) 845-8844.

Transforming the Organization: Integrating Business, People and Information Technology. Wellesley, Mass., June 2-4 — Contact: Babson College, Wellesley, Mass. (617) 239-4354.

Annual Personal Communications and Computing Show. Chicago, June 3-6 — Contact: Electronic Industries Association, Washington, D.C. (202) 457-8762.

JUNE 6-JUNE 12

Equipment Resources Planning Institute. Albuquerque, N.M., June 7-8 — Contact: Equipment Resources Planning Institute, Santa Monica, Calif. (310) 394-2997.

Xhibition '93. San Jose, Calif., June 7-11 — Contact: Ed Chuang, Integrated Computer Solutions, Inc., Cambridge, Mass. (617) 621-0060, Ext. 111.

Autodesk Expo '93. Anaheim, Calif., June 8-10 — Contact: AEC Systems, Inc., Newington, Conn. (203) 666-6097.

Successful Mainframe Downsizing in the Financial Industry. Chicago, June 8-10 — Contact: Uniform Associa-

tion, Santa Clara, Calif. (408) 986-8840.

First Government Help Desk and Computer Training Conference. Washington, D.C., June 8-11 — Contact: Ruder Finn, Inc., Cambridge, Mass. (617) 577-0007.

Retail Systems '93. Boston, June 9-11 — Contact: Candace Cutler, Retail Systems '93, Newton Highlands, Mass. (617) 527-4626.

Windows Programming Using C++. Boston, June 10-11 — Contact: Boston University Corporate Education Center, Tyngsboro, Mass. (508) 649-4200.

New England Systems Seminar. Waltham, Mass., June 11 — Contact: Merrill Davidson, New England Systems Seminar, Waltham, Mass. (617) 328-0724.

JUNE 13-JUNE 19

Seventh Netron Users Conference. Toronto, June 13-16 — Contact: Leslie Connell, Netron, Inc., Toronto, Canada (416) 636-8333.

The Outsourcing Conference. San Francisco, June 14-15 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3880.

Electronic Messaging '93. Atlanta, June 14-17 — Contact: Electronic Mail Association, Arlington, Va. (703) 875-5620.

International Teleconferencing Association (ITA) Conference '93. Washington, D.C., June 14-17 — Contact: ITA, Washington, D.C. (202) 833-2549.

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They say: "Yeah—Proprietary platform stuff, right?"

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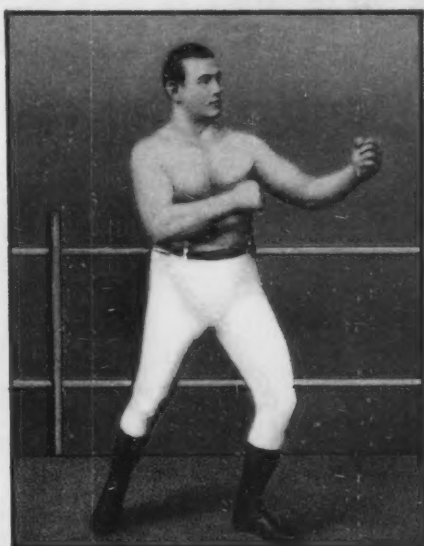
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- 23. Network Sys. Mgt.; LAN Mgr., PC Mgr.
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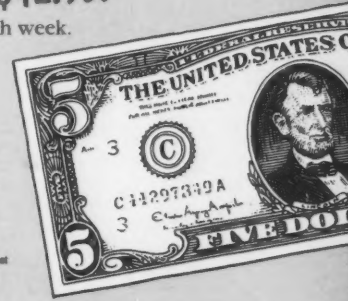
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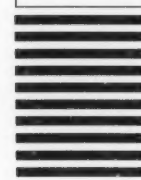
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In Depth

Welcome to

WARP SPEED

Technology is hurtling out of the chute almost too fast for us to absorb and, when compared to what's coming, this is slow. To cope, we will have to change our mental clocks, adapt to continual learning and rely more on users.

BY MICHAEL S. HOWARD

Technological change is no longer passing us by; it is crushing us. In the "old days" of the 1980s and earlier, vendors delivered computer technology every three to five years. Today, we get significantly changed computer systems every 12 to 18 months.

By itself, such rapid delivery is a good thing. So what's the problem? The problem is that this accelerated pace changes everything about how we manage computer technology, staff and projects and how we interact with users. No

Howard is president of Clove Consulting, Inc. in Cobleskill, N.Y. Previously, he taught computer science at the State University of New York.

longer can we view computer systems as a capital resource, like cars and heavy equipment, which we replace when they wear out.

Stretching the wardrobe
Forward-thinkers approach computer resources as if they were a wardrobe of clothing, adding and discarding new items constantly. They view the system as something that evolves, not as something to discard wholesale and replace.

When computer technology evolved at the slow rate of three to five years per generation, there were long periods of stability prior to upgrading to a new system. Because of the long cycles, we could manage computer installations as a series of discrete projects that did not overlap.

We would figure out what we needed and write that down. We

would request bids from contractors and vendors and evaluate them. We would purchase equipment and schedule installation and training. We would run old and new systems in parallel for a while

and then convert to the new system and train staff. Then we would settle down to run the system — with periodic upgrades — typically for five years or so.

Setting things up this way was OK because we would buy new equipment at the beginning of its life cycle, which lasted two or three generations. At any one time we would be blending in two generations, with the third waiting in the wings as a replacement. With approximately three years per generation, we had at least six to nine years before we had to convert to a new system. Everything remained fairly stable.

Even though we typically exhausted two to five years of those nine years on planning and installation activities, it was no big deal. After all, we still had plenty of time — four to six years — to get the most out of the system.

The capital equipment concept assumes that the useful life of the equipment significantly exceeds

Warp speed, page 93



JOHN DRECH

MENTAL SHIFT

A whole new way of managing systems and staffs emerges when you switch from thinking of systems as capital equipment to thinking of them as evolutionary resources

Activity	Capital equipment model	Evolutionary model
Needs analysis	Periodic	Ongoing
Systems acquisition	Project-oriented	Continual change
Staffing	Periodic training	Ongoing education
Software conversion	Project-oriented	Ongoing/Piecemeal

The Results



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Best Service/Support	AT&T Tridom
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V.32/V.32bis/V.42/V.42bis Modems

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Prefer to Do Business With	Intel

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Diagnostic/Test Equipment

Best Technology	Hewlett-Packard
Best Price/Performance	Hewlett-Packard
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Best Price/Performance	AT&T Paradyne
Best Service/Support	AT&T Paradyne
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Packet Switches

Best Technology	Motorola/Codex & Northern Telecom
Best Price/Performance	Motorola/Codex
Best Service/Support	Northern Telecom
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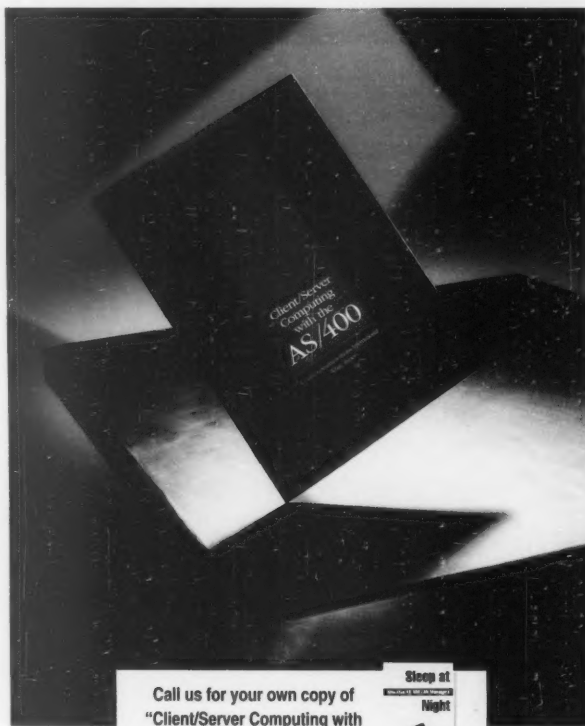
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In Depth: Welcome to Warp Speed

Continued from page 89
the time and cost to acquire it. Unfortunately, this is no longer true. Because a new generation of technology now appears every year or year and a half, most companies hold on to technology for only two or three years. Unfortunately, two or three years is the approximate time required to plan, budget, acquire, implement and learn a new system.

The time to acquire and learn a system has become comparable to the lifetime of one complete generation of technology.

Technology overlap

With technology's shortened useful life, information systems can't manage computer installations discretely anymore. Generations of technology overlap and blur together. Staffs are continually maintaining the current system while trying to replace it and learn a new one.

If we don't want to sink under the crushing weight of keeping up, we have to change our expectations for our computer installations. We have to break out of our outmoded way of thinking so we can manage systems and staff properly. The following beliefs are now sacrilege:
◆ **Users and IS don't mix.** Forget it. This may have been true in a stable computing environment, but it is not in a volatile one. Users have to become IS staffers' eyes and ears. They have to take on a greater role in system reliability.

The more sensitive users are to monitoring software reliability and reporting problems accurately to systems admin-

istration staff, the more time they can save technical staff. Every blind alley the technical staff goes down places the entire business in jeopardy.

◆ **We can hire someone who knows the system.** This is no longer possible. The system is too complex and changing too rapidly.

When a company kept its equipment for five to eight years, it didn't have to worry about education. Companies promoted the best one or two staff members to manager positions and replaced lower level staff along with the equipment. In this way, it saved on training costs while retaining the generalized knowledge of the previous generation of technology.

It won't be long before companies won't be able to buy trained staff. Bidding will be fierce for the few hired guns who are able to stay on the technological

edge. That's because most of the already employed will be too busy keeping up on the job to study ahead.

We'll have to stop thinking of training as a luxury — something that is an easy first cut when money is short. Most importantly, the essence of training has to change. Training can't be about teaching a person to be competent to operate a machine or program. The objective is to help students become intellectually independent and skilled problem-solvers.

With the short life of equipment and associated software, not to mention the ease of use of modern graphical user interfaces, it may be cost-effective to hire self-training people.

◆ **Let the "Other Guy" work out the bugs.** When a generation of technology had three to five years of useful life, it made no sense to buy the latest untried

technology. We could wait up to two years before committing. We can't do that anymore. We have to learn how to use and live with buggy technology.

◆ **Needs analysis lasts six months to two years.** We used to be able to put off needs analysis until it was time to upgrade the system. We knew it was time because the equipment was on the verge of being obsolete and users were complaining.

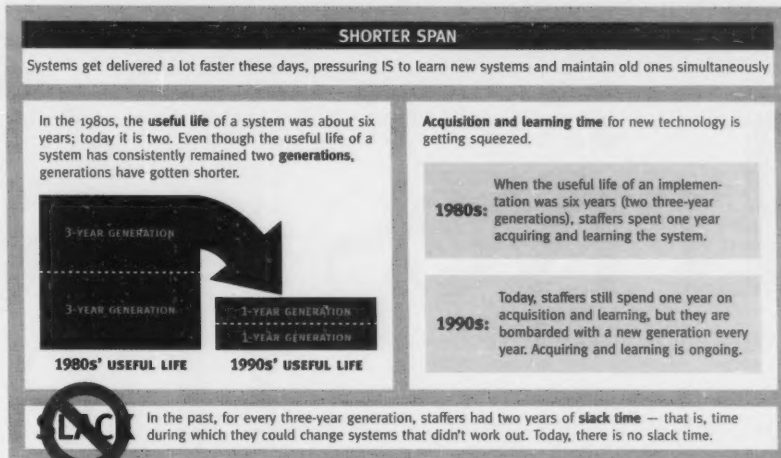
In today's evolutionary systems, with computer resources mutating in new directions very quickly, needs analysis is ongoing. Avant-garde IS groups will create a new job title for this all-consuming task.

◆ **Acquisition is handled by the RFP.** We know the request for proposals (RFP) ropes — prepare, advertise, get responses, review and score. We've all been involved in large, expensive, long-life acquisitions.

Throw all that out. Today, acquisitions need to be more like purchasing inventory for a department store.

Buyers establish long-term relationships with vendors, shop at trade shows and rely on their experience to get good deals, not on how well they handle the bid process.

The bid process will be reserved for decisions about long-life items only, however few there are. Even once-sacred cows — operating systems, CPU architecture and network protocols — are becoming commodity items as interoperability becomes possible. *



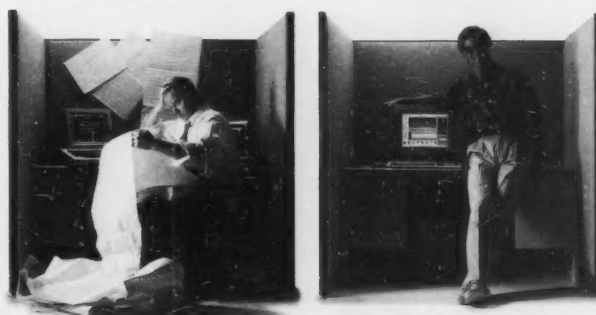
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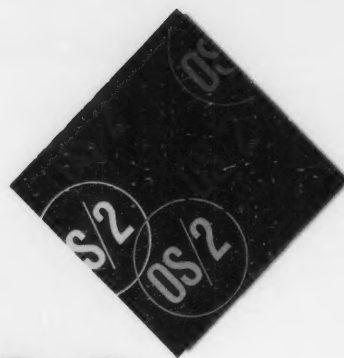
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

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Computer Careers

Generalists find increased opportunity

By Candee Wilde

IS THE AGE OF the specialist over? Yes and no. There's still room for some folks with a depth of expertise in a narrow technology band, particularly in the PC realm, but for maximum employability, broader is better.

For example, The Dow Chemical Co. in Midland, Mich., is moving away from employing a programming specialist, an analysis specialist and a design specialist. Instead, explains Scott Brown, manager of global systems, Dow has combined the three posts. Brown describes the position as a "whole job."

The company is moving away from specialized programmers and analysts because it buys much of its software off the shelf. "We still write code, but we do analytic work as well," Brown says.

Fred Catalayud, manager of application development services at the Community Health Care Plan in Wallingford, Conn., also sees the number of specialist

positions shrinking and suggests that this reality should be reflected in academic training programs.

"Going through a very technical program at the undergraduate level is not enough now," Catalayud says. Information systems professionals need more education in understanding business basics: debits and credits, profits and losses and the functions used to run a particular business.

At Pennsylvania Blue Shield in Camp Hill, Pa., demand for people with language- and platform-specific knowledge is dwindling.

"We still have a use for specialists to provide reusable interfaces to various technical platforms," says Dennis

"We still have a use for specialists to provide reusable interfaces to the various technical platforms."

—Dennis Margel,
Pennsylvania
Blue Shield

Margel, director of information technology. "But we want analysts and programmers to concentrate on the business we're in rather than the technology [the IS department] is associated with."

The health insurer is now concentrating on teaching IS staff members enough about the business so they can spot ways of enhancing it with more or better information. One way this is being done is through a series of seminars in which employees from different areas of the business, such as marketing, accounting and operations, make presentations to IS employees about what they do.

Business knowledge

"The goal is to increase the programmers' knowledge of that business function, the terminology and how it relates to other areas of the corporation," Margel explains. "Over a period of time attending seminars on different areas of the business, analysts and programmers get a broader and broader view of how the business operates and how different functions interrelate."

Specialized platform skills aren't all that relevant now, according to Margel. "The intent is that all code is platform-independent, so that whatever direction we choose, we should be in a position to make that move without too much effort." What is really important is having a knowledge of the business intimate

enough to know where and how IS can make significant contributions, Margel explains.

At Piedmont Hospital in Atlanta, Cobol veterans such as programming manager Percy Williams are juggling old duties, such as maintaining the hospital's extensive database, with learning about PCs, PC application software and computer-aided software engineering tools.

Emphasis has clearly shifted away from mainframe pursuits to development of client/server systems.

But even these systems probably will not require the same level of ongoing specialized attention. The expectation is that users will be able to take over many of their own report creation chores once much of the critical information has been moved onto PC file servers.

Wilde is a free-lance writer in Easton, Conn.



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End-user support pros need networking know-how



By Emily Leinfuss

End-user support is mostly about connections — network connections, that is. "The move toward distributed client/server computing implies the need for communications and integration. This means understanding how everything is connected," says Jerry Bryan, assistant director of user support at WVNET in West Virginia, an off-campus computing center supporting 16 state colleges.

Gary Stephens, manager of end-user computing at the Art Institute of Chicago, is a case in point. Stephens recently moved into his end-user support position from that of network manager. He says he believes those skills help him in his new job. "Networking is very marketable."

While Stephens' networking skills are self-taught, many companies offer employees computer-based training and the chance to attend seminars and classroom training to get them up to speed on local-area network management and unfamiliar technologies such as Novell, Inc.'s NetWare.

Stephens gets great satisfaction from resolving complex problems in innovative and cost-effective ways. For example, the company was recently investigating how it could get its PCs and Apple Computer, Inc. Macintoshes to commu-

End-user support career ladder

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SALARY RANGE
\$45k to \$60k

PC SUPPORT ANALYST

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SALARY RANGE
\$30k to \$40k

ASSOCIATE PC SUPPORT ANALYST

Fixes user problems such as broken keyboards, hard disks and printers. Maintains hardware and software. Supports basic spreadsheet and word processing applications.

SALARY RANGE
\$20k to \$29k

nicate. Third-party solutions cost more than \$10,000. "I found a solution in public domain software, which we had to configure from scratch, but it was a zero-cost solution," he explains.

Complex problems seem to be a given in end-user support.

Scott Henderson, PC hardware technician at the Massachusetts Bay Transit Authority (MBTA) in Boston, experienced a problem at the MBTA, which caused three days of crashing servers. He eventually isolated a virus on 18 different PCs and some servers. The virus had started from a nonauthorized disk.

Jack of all trades

In smaller firms, the end-user support function is wrapped in with other responsibilities such as programming.

For example, at Kelly-Springfield Tire Co. in Cumberland, Md., the titles for end-user support personnel are programmer and systems analyst, says Rod Horning, manager of information technology and security.

Typically, advancement potential seems to fall either one of two ways: Move up through the ranks of end-user support into more and more senior positions, ending in a managerial role; or move back into information services, like Scott McCollum, manager of user support services at Sinclair Community College in Dayton, Ohio, is about

to do.

McCollum started as a programmer at the college in 1983, moved into applications programming and, after 4½ years, stepped into his present position. During the past five years, his staff has grown from two to 18.

Burnout is a problem

But burnout has gotten the best of

him. McCollum says he is tired of putting out fires and listening to users' problems. He is moving back into a technical role at the college.

"If you don't care about helping people resolve problems, you can get fed up quickly. Even with that desire, you get to that point," he claims.

Gus Sanchez, a senior network PC specialist at Westinghouse Broadcasting Co. in Shelton, Conn., says most people stay in end-user support for four to five years before moving on to something else, although he has not yet reached that point.

Instead, he is challenged by the day-to-day variety. "The best foundation [for the job] is a good working knowledge of DOS, Windows and some concept of Novell," Sanchez says.

Sanchez's boss, Mark Zito, man-

ager of end-user computing at Westinghouse, adds that a typical end-user support job would also require support of applications such as Microsoft Corp.'s Excel and Lotus Development Corp.'s 1-2-3.

Like many end-user support professionals, Zito says his real role at the company is serving as network manager for wide-area

networks and LANs. While Zito's staff members are putting out fires, such as downed printers or servers or problems with the network shell, Zito's job entails strategic and technical planning.

Entry-level salaries for end-user support positions range from \$20,000 to \$40,000, and senior-level people earn \$45,000 and up.

On the technical side, landing a job as an end-user support professional requires proficiency with PC operating systems, including DOS, IBM's Personal System/2 and Microsoft's Windows, most major applications software, PC hardware, plus whatever mainframe or minicomputer-based operating systems are used at a company.

Leinfuss is a free-lance writer based in Sarasota, Fla.



Westinghouse's Sanchez: Best foundation for the job is knowledge of DOS, Windows and Novell

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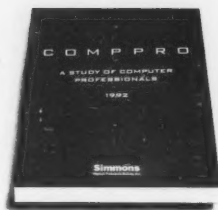
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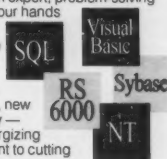
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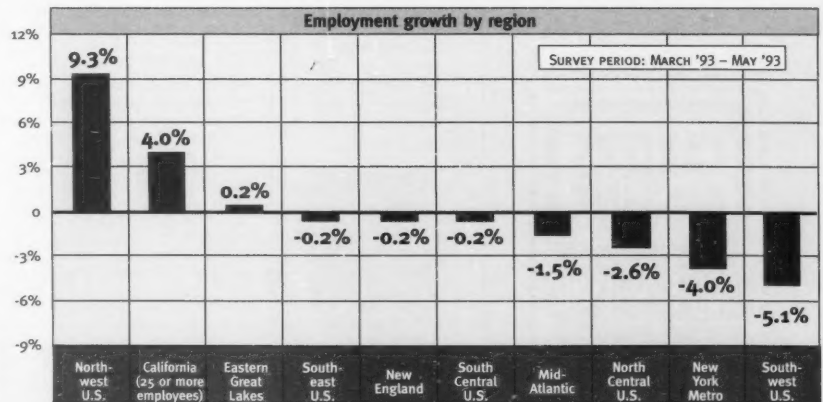
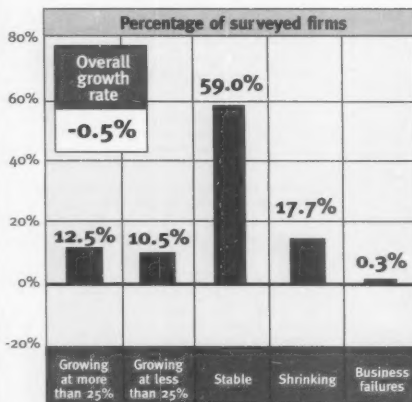
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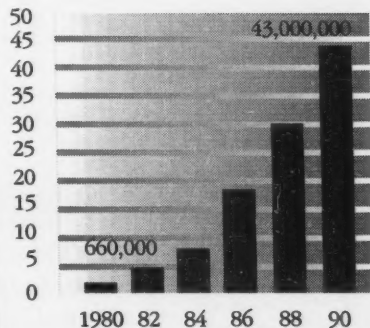
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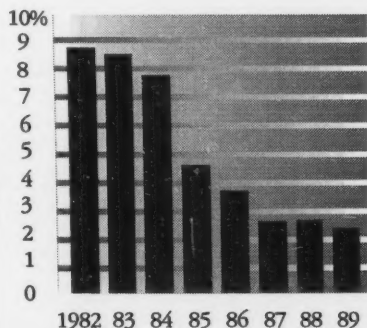
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How to add productive years to older PCs



By Todd Henschell

A lot of people have had to ditch their 80286- and 80386SX-based PCs to run Windows programs.

Now, even DOS stalwarts are finding their applications too bloated to run on the older machines. Luckily, such sluggishness doesn't have to spell the end of your system. A few careful changes could buy you a few years and save you the cash to pay for the move to a graphical user interface operating system.

Which version of DOS are you using?

To buy some time, look at what DOS version you're using. If you're not already running it, you should upgrade to DOS 5.0, which can be purchased for as little as \$30 a copy. Wholesale vendors are eager to move it off the shelves as DOS 6.0 becomes the standard.

Checked your disk cache?

If you're not using a disk cache, your system isn't running at top speed. Roughly 80% of the PCs I serviced in 1992 didn't have a cache.

Most 4-year-old or newer 286 systems were shipped with at least 1M byte of random-access memory. They were also sent out the factory door with sluggish Modified Frequency Modulation (MFM) hard drives. If your aging system has at least 1M byte of RAM, the 384K bytes of cache

you gain using the high memory area (640K to 1,024K bytes) will help. On small files that fit within the cache size, expect a 10% to 25% improvement in disk access speed.

DOS 5.0 and 6.0 ship with Smartdrive. Although it's a fairly slow cache that is missing some important features such as keyboard control, it's better than no disk cache at all. The fastest cache I've run across is the \$50 HyperDisk from Hyperware in San Francisco. On a system with DOS 5.0 or higher and at least a 286 processor, HyperDisk can usually load itself out of the lower 640K bytes, freeing more memory for your applications. Plainly described, it is *blazing fast*, consistently scoring high on cache benchmarks.

With a 2M-byte cache, expect fivefold improvement in disk response depending on the types of files you load during the day. If your PC has 2M bytes or more of RAM, allocate 1M byte to a disk cache and you'll see immediate improvement.

Compacted your hard disk lately?

Another glaring problem with a high percentage of older PCs is that the files on the hard disk have not been compacted since the machine was first installed. When it writes files, DOS makes no effort to keep the file in one chunk, which results in the spreading of data all over the hard disk surface.

A slow hard disk will have to jerk the

read head across the platters to pick up pieces of the file you want to load. It's akin to getting dressed with your shoes in the basement, your tie on the roof, your pants in the backyard and your shirt in the kitchen. Not the speediest of methods.

A good disk compactor is Norton Speed Disk, which ships with Symantec Corp.'s Norton Utilities. Speed Disk can be instructed to put directories that rarely have new or changed files at the beginning of your hard disk.

That way, fragmentation happens mostly at the end of the disk. The next time you compact the drive, only the portion that's fragmented will need to be rewritten. Speed Disk will compact a moderately fragmented 40M-byte MFM drive in five to 30 minutes, depending on the speed of the CPU.

Counted your device drivers?

I'd like to mention something about the "minimalist" PC, a slow 286 or 386SX with less than 4M bytes of memory and an older hard disk. Look at the drivers and other devices that are only needed occasionally. Each device takes memory, and with most 286 machines, they often can't be loaded above the 640K-byte mark. This means applications will have to dip into the hard disk more often to get the data they need, or they might not load

at all.

While it's tempting to install things such as firewalls screen savers, pop-up calculators and so on, resist the urge. The slower the hard disk in a low-memory situation, the more the system will feel bogged down.

Avoid undelete tracking utilities such as Datamon, which ships with Norton Utilities, or any of the safe delete programs. They force the disk to perform copy and delete operations for every file you delete. The target file gets copied to a hidden directory, and only then does the original get deleted. These utilities hog space, and you won't need them if you've backed up your system.

Equally demanding on the slower system are antivirus terminate-and-stay-resident (TSR) programs, which can triple the time it takes a program to load. If you want maximum speed, dump the undelete tracking software and check for viruses with an interactive program, not a TSR.

If you must load network drivers or other devices on a 286 PC, take a look at QRAM from Quarterdeck Office Systems in Santa Monica, Calif. With shadow RAM or certain chip sets such as Chips and Technologies, Inc.'s Neat and Leap units, QRAM allows the 286 to load drivers and TSRs above 640K bytes, keeping that precious 640K bytes clear.

Henschell is a free-lance writer based in Burbank, Calif.



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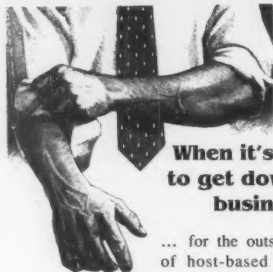
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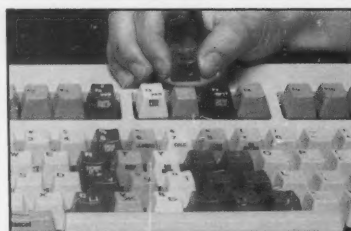
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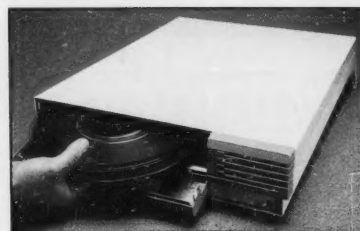


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Editorial Index

Companies in this issue

Page number refers to page on which story begins

3Com Co.	45,66	Dell Computer Corp.	4,38	Legent Corp.	68,114	Saks Fifth Avenue	86
3M Co.	24	Department of Transportation	65	Lehman Brothers, Inc.	6	Scientific and Engineering Software, Inc.	71
21CenNet, Inc.	115	DeskVision, Inc.	37	L. L. Bean, Inc.	86	Security Pacific Financial Services Corp.	86
A		D. H. Brown Associates, Inc.	21	Logic Works, Inc.	71	Sequent Computer Systems, Inc.	14
A. T. Kearney Inc.	16	DHL Airways, Inc.	cover1,16	Lotus Development Corp.	2,4,48,65,66	Servin Rosen Funds	115
ABB Information Management Services, Inc.	65	Digital Equipment Corp.	cover1,14,6,10,12,14,38,48,51,53,68,71,75,114,116	Lutheran Brotherhood Insurance Corp.	45	Shapewear Corp.	37
ABB Power Generation, Inc.	65	Disk/Trend, Inc.	24	M		Siemens/Nixdorf	
Aberdeen Group	21	Distributed Processing Technology	38	Magee Enterprise	45	Information Systems, Inc.	6,14
Adaptec	38	Dow Chemical Co.	96	Mailnet Medical, Inc.	48	Silicon Graphics, Inc.	cover1
AddStar, Inc.	40	Dow Jones & Co.	66	Management Science America, Inc.	48	SmartStar Corp.	2
Advanced Logic Research, Inc.	4	E		Manufacturers Hanover Corp.	4	SmithKline Beecham	81
Advanced Micro Devices, Inc.	15,114	Electronic Data Systems Corp.	6	Maritime Command Data Center	10	SoftTech, Inc.	101
AI Corp.	115	Emass Storage Systems Solution	116	Marriott Corp.	20	Sony Corp.	24
Aion Corp.	115	Employer's Resource, Inc.	40	Maspar Computer Corp.	cover1	Spear, Leeds & Kellogg	6
Alex. Brown & Sons, Inc.	114,115	Enron Gas Services	45	Matheys Corp.	115	Spectrix Corp.	6
Allen Systems Group, Inc.	68	EQ, Inc.	24	Mathews & Co.	85	St. Agnes Medical Center	45
Amdahl Corp.	53	Ernst & Young	4,115	Medstat Systems	66	Stac Electronics, Inc.	40
American Express Corp.	45,81	Evergreen CASE Tools, Inc.	76	Merrill Lynch & Co.	4,6	State Street Bank	cover1
American Stock Exchange	6	F		Meta Group, Inc.	56,68	Sterling Software, Inc.	68
Andersen Consulting	71	F Hoffmann-La Roche AG	48	Micro Hedge	6	Sun Microsystems, Inc.	cover1,6,14,21,45,66
Apple Computer, Inc.	cover1,8,51,75	Federal Express Corp.	cover1	Microsoft Corp.	cover1,2,4,8,10,32,37,40	Sungard Recovery Services, Inc.	65
Ark Asset Management Co.	66	Fisher Wayland, Cooper and Leader	1	51,53,58,65,75,76,114,116	Synbase, Inc.	75,115
Art Institute of Chicago	97	Fleet Finance, Inc.	86	Mips Technologies, Inc.	cover1,15	Symantec Corp.	8,108
ASEA Brown Boveri	85	Fore Systems, Inc.	56	Momentum Software Corp.	12	Symbus Technology, Inc.	50
AST Research, Inc.	4,38,116	Foster Wheeler U.S.A. Corp.	20	Motorola, Inc.	8,15,51	Synerdyne	6
Aston Brook	71	Frye Computer Systems, Inc.	45	N		Synon, Inc.	101
Auspex Systems, Inc.	115	Fujitsu Ltd.	115	National Cable Television Association	1	SynOptics Communications, Inc.	45,56,114
Avanti Software, Inc.	cover1	Fujitsu-ICL Systems, Inc.	6	National Storage Laboratory	24	Systems Design & Development, Inc.	68
B		G		Nationsbank Corp.	4	Systems Strategies, Inc.	cover1,12
Bachman Information Systems, Inc.	71	Gartner Group, Inc.	6,14,68	Natural Language, Inc.	71	T	
Baxter Healthcare Corp.	4,65	Gazelle Systems, Inc.	101	NCR Corp.	21,48,114	Tamarack Storage Devices, Inc.	24
BCPR Services, Inc.	38	Granite Communications, Inc.	6	NEC America, Inc.	37	Tandem Computers, Inc.	cover1
Beneficial Life Insurance Co.	101	Grid Systems Corp.	6	NEC Corp.	15	Technology Management, Inc.	86
Beyond, Inc.	53	Gupta Technologies	2	NEC Technologies, Inc.	38	Tele-Communications, Inc.	1
Blyth Software, Inc.	75	H		Netpower, Inc.	cover1	Terradata Corp.	21,114
Boeing Computer Services	cover1	Hewlett-Packard Co.	cover1,6,10,14,21,24,38,45,51,65,66,68,71,116	Network Computing, Inc.	45	Texas Instruments, Inc.	71,81
Boole & Babbage, Inc.	68	Hochst Celanese Corp.	38	Network Equipment Technologies, Inc.	53	The ASK Group, Inc.	68,75,114
Borland International, Inc.	2,51,76	Horizon Strategies, Inc.	12	Network Security Systems, Inc.	51	The Chase Manhattan Bank NA	86
BP Exploration	14	Huntman Consulting Group	1	New York Life Insurance Co.	40	The Chicago Board of Trade	86
Brightwork Development, Inc.	45	HyperWare	108	Niemann Marcus	20	The Disc Co.	24
Bristol Technology, Inc.	51	I		Northern Telecom, Inc.	66	The Thiokol Corp.	101
BT North America	114	IBM	cover1,4,8,10,12,14,15,21,24,28,48,51,65,68,71,75,114,115,116	Northgate Computer Systems, Inc.	6	The Yankee Group	cover1,12,86
Burger King Corp.	75	Independence Technologies, Inc.	21	Notebook Computer	51	Time Warner, Inc.	40
C		Information Builders, Inc.	2,71	Novell, Inc.	2,32,45,51,65,75,101,114,116	TouchStone Software Corp.	40
Cabletron Systems, Inc.	45,56	Information Technology Association of America	86	O		Transarc Corp.	21,114
Candle Corp.	68	Informix Software, Inc.	75	ObjectDesign, Inc.	114	Travelers Insurance Co.	12
Ceridian Corp.	115	Input	86	Olivetti	38	Trinzle Corp.	71,115
Channel Computing	71	Insignia Solutions, Inc.	38,51	Open Software Foundation	cover1	Turner Corp.	38
Chemical Banking Corp.	4	InSoft, Inc.	37	Oracle Corp.	cover1,2,6,14,16,75,115	Twinhead International Corp.	114
Chicago Board of Trade	6	Institute for Business Technology, Inc.	53	cover1,2,6,14,16,75,115	U	
Chicago Mercantile Exchange	6	Integrated Systems, Inc.	76	"Outlook on Professional Computing"	40	Unisys Corp.	4,6
Cincom Systems, Inc.	10	Integrated Systems Solutions Corp.	82	P		United Airlines	86
Cisco Systems, Inc.	12,53,56,114,116	Intel Corp.	cover1,4,15,24,38,45,76,114	Pacer Software, Inc.	51	United Parcel Service, Inc.	cover1
CNA Insurance Cos.	114	Interex	65	Peeriegic, Inc.	53	Unix System Laboratories, Inc.	cover1,21
Cognos Corp.	2,71	Intergraph Corp.	cover1	Pennsylvania Blue Shield	96	US West	6,16
Community Health Care Plan	96	Interleaf, Inc.	48	Performance Computing, Inc.	115	USA Group, Inc.	71
Compaq Computer Corp.	4,38,65,115	Intermountain Gas Co.	65	Persoft, Inc.	53	V	
Compass America	82	Internal Revenue Service	71	Personal Technology, Inc.	37	Valley Bancorp.	48
Comprecare Healthcare Services, Inc.	71	International Data Corp.	cover1,4,12,14,15,115	PictureTel Corp.	37,58	Verdix Corp.	51
CompuServe, Inc.	114	InterWest Partners	115	Piedmont Hospital	96	ViewPoint Systems, Inc.	37
Computer Associates	65,68,71	K		Popkin Software and Systems, Inc.	71	Volpe, Welty & Co.	114
Computer Information Systems, Inc.	68	Kash n' Karry Food Stores	14	Powersoft Corp.	2,71	Votek Systems Ltd.	53
Computer Network Technology Corp.	53	Kelly-Springfield Tire Co.	97	Procter & Gamble Co.	66	W	
Comshare, Inc.	48	Keystone Insurance Co.	71	Professional Recruiters, Inc.	101	Wang Laboratories, Inc.	65
Control Corp.	76	Knight-Ridder, Inc.	66	Progress Software Corp.	115	Wellfleet	
Consolidated Edison Co.	50	KnowledgeWare, Inc.	71,115	Public Service Electric & Gas Co.	66	Communications, Inc.	12,56,114,116
Coopers & Lybrand	66	KPMG Peat Marwick	cover1	Pyramid Technology Corp.	cover1,14,21	Westinghouse Broadcast Co.	97
Coral Networks Corp.	12	L		Q		Wilson WindowWare	37
Corel Corp.	37	LANcity Corp.	1	Qstar Technologies	24	WindTunnel Software, Inc.	1
CoreStates Financial Corp.	81	Landmark Research International Corp.	40	Quaker Oats Co.	45	WordPerfect Corp.	2,101
Covia Technologies	12	Landmark Systems Corp.	68	Quarterdeck Office Systems	108	WorkGroup Technologies, Inc.	4,116
CrossComm Corp.	12	Lattice, Inc.	76	R		WorldCorp.	115
Cypress Semiconductor Corp.	115	LBMS, Inc.	71	Reuters PLC	66	Wyse Technology, Inc.	38
Cyrix Corp.	114	M		Revlon, Inc.	66	X	
D		J		Rolls Royce Power Engineering Ltd.	10	XTree Co.	45
Data General Corp.	14	LANcity Corp.	1	Republic National Bank of New York	6	Z	
Datapro Information Services Group	58	Landmark Research International Corp.	40	S		Zenith Data Systems	4,116
DataProducts, Inc.	65	Landmark Systems Corp.	68	Saber Software Corp.	45		
Dauphin Technology, Inc.	24	Lattice, Inc.	76				

Friday Stock Ticker

Gainers

Losers

Percent

COMPUTERVISION CORP.	44.0	KNOWLEDGEWARE INC.	-21.8
MICROCOM INC.	31.0	REXON INC.	-17.4
CONVEX COMPUTER	23.7	WORDSTAR	-13.5
CYPRESS SEMICONDUCTOR CORP.	23.2	POLY MANAGEMENT SYS.	-12.8
ADVANCED LOGIC RESEARCH	18.2	BROOKTRUST TECHNOLOGY	-12.8
GO VIDEO	17.6	EASL CORP.	-12.5
BACHMAN INFO. SYSTEMS	17.4	STRATACOM INC.	-11.7
DATARAM CORP.	17.1	PROGRESS SOFTWARE CORP.	-11.4

Dollar

BMC SOFTWARE INC.	4.00	POLY MANAGEMENT SYS.	-5.75
AUTODESK INC.	3.50	PROGRESS SOFTWARE CORP.	-5.00
STORAGE TECHNOLOGY	2.75	INTEC CORP.	-3.88
SYMANTEC CORP.	2.63	MATSUMITA ELECTRONICS	-3.88
CYPRESS SEMICONDUCTOR CORP.	2.38	BGS SYSTEMS INC.	-3.00
INFORMIX CORP.	2.38	LEGENT CORP.	-2.50
RAINBOW TECHNOLOGIES INC.	2.15	KNOWLEDGEWARE INC.	-2.25
ADOTE SYSTEMS INC.	2.13	HARRIS CORP.	-2.28

Unplugged

Will wireless communications provide the next rags-to-riches opportunity on Wall Street?

Bridge and router stocks such as Cisco Systems, Inc. (CSCO) and Synoptics Communications, Inc. (SNPX) have provided the current wave of sudden wealth for shrewd stock market investors. Some analysts and industry watchers said they believe that as the wireless communications market matures, it may provide a similar gold rush somewhere in the future.

A recent report by analyst Eric Zimits at Volpe, Welty & Co. projected a mobile data user base in excess of 13 million within the next 10 years.

Zimits noted heavy demand in recent years for numerous products and services that enhance mobile productivity, such as notebook computers, cellular phones and pagers. The companies that provide standards and products for connecting the mobile work force to corporate databases and electronic-mail networks should present a tremendous investment opportunity, he said. Zimits likened the situation to the PC scene several years ago, just prior to the boom in demand for local- and wide-area networking and inter-networking equipment.

However, the confused current wireless picture provides few sure bets. Vendors and technologies are moving in numerous different directions (cellular, spread spectrum, radio frequency, laser and infrared, to name a few) and proposing various standards [CW, May 3].

"It's very complicated. Just in wireless LANs, companies are moving in three directions. And suddenly you're into Federal Communications Commission issues, bandwidth issues. It's like peeling back the layers of this onion, knowing very well there must be a market for this stuff somewhere," said James Wade, an analyst at Alex. Brown & Sons, Inc.

"There are going to be a lot of companies that jump out in front in terms of setting standards, and they're going to get a lot of arrows in their backs," Wade said.

Investors who want to dive in immediately will find few pure plays in the wireless area.

Wade nodded toward Motorola, Inc. (MOT) as the current technology leader. "They're definitely way out in front in terms of what they're doing in wireless," he said.

Zimits mentioned Intel Corp.'s (INTC) alliance with RAM Mobile Data and BellSouth Corp. to develop future mobile data products. Start-up General Magic, Inc. is backed by Motorola, Apple Computer, Inc. (APPL) and others in its attempt to build a communications-oriented operating system for portable computing. — Derek Slater

52-WK RANGE	MAY 14 WK NET			EXCH	52-WK RANGE	MAY 14 WK NET		
	3PM	CHANGE	PCT		3PM	CHANGE	PCT	
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Up 0.4%				OTC	13.63 6.88	INTERLEAF INC.	8.63 -0.13 -1.4	
OTC	87.63 9.63	3 COM CORP. (H)	35.63 -1.38 -3.7	OTC	18.00 8.25	INTERPOLY INC.	8.13 -0.13 -1.5	
NYS	80.25 61.38	AMERICAN INFO TECHS CORP.	72.50 -2.13 -2.8	OTC	26.00 8.25	KNOWLEDGEWARE INC.	8.50 -2.38 -21.8	
NYS	60.38 40.63	AT&T	54.75 -1.63 -2.9	OTC	32.75 14.75	LOTUS DEVELOPMENT (H)	30.50 -2.13 -6.7	
OTC	3.56 0.75	ARTEL COMMUNICATION CORP.	2.00 0.00 0.0	OTC	23.00 7.75	MATHSOFT	10.75 -1.00 -8.5	
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NYS	56.75 42.38	BELL ATLANTIC CORP.	52.50 0.25 0.5	OTC	11.63 1.88	MCA SOFTWARE	11.13 -0.13 -1.1	
NYS	97.50 46.75	BELL SOUTH CORP.	51.50 -0.13 -0.2	OTC	19.00 4.38	MICROGRAFX INC.	5.75 0.50 9.5	
OTC	18.50 9.50	BOLT, BERANEK & NEWMAN	4.63 -0.13 -2.6	OTC	95.00 65.50	MICROSOFT CORP.	85.13 -1.50 -1.7	
NYS	98.75 42.13	CABLETRON SYSTEMS (H)	97.00 -1.50 -1.5	OTC	40.25 14.00	ORACLE CORP. (H)	38.50 -1.00 -2.5	
OTC	19.50 3.75	CENTIGRAM COMMUNICATIONS	17.75 0.25 1.4	OTC	31.88 15.38	PARAMETRIX TECHNOLOGY	29.13 -1.13 -3.7	
OTC	38.50 17.75	CHIPCOM CORP. (H)	37.25 0.75 2.1	OTC	40.50 22.50	PEOPLESOFT	30.50 1.50 5.2	
OTC	50.25 20.00	CISCO SYSTEMS INC. (H)	49.88 1.50 3.1	OTC	9.50 3.50	PHENIX TECHNOLOGIES	5.00 -0.25 -4.8	
OTC	18.75 5.00	COMPRESSION LABS INC.	10.38 -0.63 -5.7	OTC	40.00 25.38	POWERSTOCK	28.25 -1.25 -4.2	
OTC	4.63 0.88	DATA SWITCH CORP.	3.50 0.13 3.7	OTC	25.00 11.25	PLATINUM TECHNOLOGY	15.75 1.25 8.6	
NYS	22.13 12.38	DIGITAL COMM. ASSOC.	13.38 0.38 2.9	OTC	61.50 29.00	PROGRESS SOFTWARE CORP.	39.00 -5.00 -11.4	
OTC	12.75 4.50	DIGITAL SYSTEMS INT'L INC. (L)	5.25 0.38 7.7	OTC	24.50 11.75	RAINBOW TECHNOLOGIES INC.	22.25 2.25 11.3	
OTC	36.50 4.00	DSC COMMUNICATIONS (H)	36.25 0.38 1.0	OTC	15.75 4.00	RASTEROPS	7.06 -0.31 -4.2	
OTC	9.50 4.75	FIBRONIX INT'L INC.	6.75 0.25 3.8	OTC	15.25 3.63	ROSS SYSTEMS	12.25 0.75 6.5	
OTC	26.00 8.75	FILENET CORP.	10.38 -0.13 -1.2	OTC	27.25 8.00	SAPPHIRE INTL. CORP. N.V.	21.75 -0.75 -3.3	
OTC	4.38 1.50	GANDALF TECHNOLOGIES INC.	3.25 -0.13 -3.7	OTC	15.00 6.75	SOFTWARE PUBLISHING CORP.	7.88 0.00 0.0	
OTC	2.06 0.69	GATEWAY COMMUNICATIONS	1.16 0.03 2.8	OTC	9.75 2.00	SOFTWARE TOOLWORKS INC. (H)	1.56 0.00 0.0	
NYS	13.38 2.88	GENERAL DATA COMM. (H)	12.75 -0.13 -1.0	OTC	12.75 3.25	STATE OF THE ART	9.25 0.75 8.8	
ASE	4.00 2.00	GO VIDEO	2.50 0.38 17.6	OTC	15.25 13.75	STRATACOM INC.	13.88 0.00 0.0	
NYS	37.75 30.63	GTE CORP.	35.25 -0.50 -1.4	OTC	18.25 8.00	STRUCT. DYNAMICS RESEARCH	17.50 1.00 6.1	
NYS	84.25 62.50	ITT CORP.	81.13 -1.38 -1.7	OTC	65.50 21.00	SYBASE INC. (H)	63.25 0.50 0.8	
OTC	19.00 8.75	MCI COMMUNICATIONS CORP.	18.48 -0.25 -0.5	OTC	44.25 10.00	SYMANTEC CORP.	42.50 -1.63 -3.7	
OTC	24.25 4.75	NETRIX CORP.	5.50 -0.38 -6.4	OTC	25.50 10.00	SYSTEMS CENTER INC.	10.00 -0.50 -4.8	
OTC	15.75 8.50	NETWORK COMPUTING DEVICES	11.25 0.00 0.0	OTC	25.50 10.00	SYSTEM SOFTWARE ASSOC.	14.50 1.00 7.4	
OTC	66.25 14.38	NEWBRIDGE NETWORKS CORP.	64.63 -0.63 -1.0	OTC	22.75 9.13	TECHNICAL SYSTEMS	15.00 -1.50 -9.1	
NYS	46.00 30.00	NORTHERN TELECOM LTD.	34.25 -1.88 -5.2	OTC	23.75 6.75	WALKER INTERACTIVE SYSTEMS	7.50 -0.75 -9.1	
OTC	35.25 22.50	NOVELL INC.	29.75 -1.50 -4.8	OTC	3.19 1.38	WORDSTAR	2.00 -0.31 -13.5	
OTC	92.50 75.00	NYNEX CORP.	82.88 -2.50 -3.0					
OTC	30.00 14.50	OCTEL COMMUNICATIONS CORP.	20.75 -2.25 -9.8					
OTC	6.25 3.38	PENRIE DATA COMM NETWORKS	4.13 -0.06 -1.5					
OTC	38.75 10.25	PICTURETEL CORP.	22.25 -1.25 -6.0					
OTC	15.25 4.88	PROTEON INC.	4.88 -0.13 -2.5					
NYS	30.38 11.50	SCIENTIFIC ATLANTA INC.	27.50 1.50 5.8					
OTC	81.50 59.38	SPRINT CORP.	79.38 -2.75 -3.4					
NYS	33.25 21.00	SPRINT CORP.	30.00 -1.00 -3.2					
OTC	27.00 15.00	STANDARD MICROSYSTEMS INC.	15.63 0.00 0.0					
OTC	10.50 6.88	STRATACOM INC.	11.38 -0.13 -1.1					
OTC	12.50 2.25	SYNOPTICS COMMUNICATIONS (H)	11.63 -1.88 -1.6					
OTC	7.00 4.13	TELENET CORP.	4.50 -0.13 -2.7					
OTC	9.38 2.13	TELENET INT'L INC.	6.13 -0.25 -4.3					
OTC	25.00 13.00	US ROBOTICS	22.25 0.75 3.5					
NYS	45.00 34.38	US WEST INC.	41.25 -0.25 -0.6					
OTC	50.00 12.00	WELLSLET COMMUNICATIONS (H)	49.00 -1.00 -2.0					
OTC	14.50 7.00	XIRCOM	10.50 -0.25 -2.3					
PC'S AND WORKSTATIONS								
Up 0.3%				OTC	7.88 2.13	WELTER (H)	7.38 0.63 9.3	
OTC	7.25 2.50	ADVANCED LOGIC RESEARCH	3.25 0.50 18.2	ASE	6.88 6.00	VLSI TECHNOLOGY	6.00 0.75 10.7	
OTC	65.25 41.50	APPLE COMPUTER INC.	55.38 0.88 1.6	ASE	7.88 2.13	WESTERN DIGITAL INC.	5.13 -0.13 -2.4	
OTC	24.25 11.25	ASPIRE RESEARCH INC.	14.50 -0.75 -4.9	OTC	37.25 12.50	ZILLOG INC.	26.25 -0.75 -2.8	
NYS	12.50 3.50	COMMODORE INT'L (L)	4.38 0.63 16.7					
OTC	18.50 21.13	COMPAQ COMPUTER CORP.	17.13 -0.38 -2.1					
OTC	49.88 15.00	DELL COMPUTER CORP.	31.25 -0.88 -2.7					
NYS	79.88 55.25	HEWLETT PACKARD CO.	78.25 -0.25 -0.3					
NYS	35.38 16.13	SIBYRATICS CORP.	34.13 -0.38 -1.1					
OTC	41.00 22.50	SUN MICROSYSTEMS INC.	25.88 -0.75 -2.8					
NYS	32.13 22.25	TANDY CORP.	29.63 -0.63 -2.1					
OTC	13.00 2.75	ZEDS INTERNATIONAL LTD.	6.00 -0.06 -1.6					
LARGE SYSTEMS								
Up 2.5%				OTC	33.75 11.66	AMERICAN POWER CONVERSION	33.25 1.75 5.6	
ASE	18.38 4.63	AMDAHL CORP. (L)	5.25 0.25 5.0	OTC	18.00 6.25	CAMLEX CORP.	6.50 0.00 0.0	
NYS	9.75 4.25	CONVEX COMPUTER	5.88 1.13 23.7	ASE	18.38 6.50	COMINTEGRON CORP.	17.13 -0.25 -1.4	
OTC	6.13 1.88	CRAY COMPUTER	3.88 0.13 3.3	OTC	38.50 10.75	CREATIVE TECHNOLOGIES INC.	29.00 0.38 1.3	
NYS	32.88 19.00	CRAY RESEARCH INC.	29.38 0.13 0.4	OTC	30.75 14.25	DATA RACE INC.	22.00 0.00 0.0	
NYS	13.88 7.13	DATACORP. CORP.	9.75 0.25 2.6	OTC	4.13 1.63	DATAVIEW CORP.	17.13 1.63 10.7	
OTC	49.25 30.38	DIGITAL EQUIPMENT CORP.	46.63 0.75 1.6	OTC	33.88 9.50	EMULCOR (H)	3.38 -0.25 -0.7	
NYS	38.63 26.63	HARRIS CORP.	35.50 -0.25 -0.6	OTC	10.50 5.38	EMULEX CORP.	7.25 0.75 11.5	
NYS	100.38 45.88	IBM	47.88 -0.13 -0.3	OTC	13.13 7.25	HANS & SUTHERLAND	11.25 0.38 3.3	
OTC	22.00 5.00	KENDALL SQUARE RESEARCH	12.01 -0.38 -3.1	OTC	33.63 12.00	INEXTECH	13.75 -0.38 -2.7	
OTC	100.38 45.88	IBM	47.88 -0.13 -0.3	OTC	26.00 7.00	INTEGRITY INT'L SYSTEMS	21.75 -1.25 -5.4	
OTC	22.00 5.00	KENDALL SQUARE RESEARCH	12.01 -0.38 -3.1	OTC	3.88 0.63	INTEGRITY SYSTEMS	3.88 -0.63 -16.3	
OTC	100.38 45.88	IBM	47.88 -0.13 -0.3	OTC	21.75 5.75	IPL SYSTEMS INC.	8.00 -1.00 -11.1	
OTC	22.00 5.00	KENDALL SQUARE RESEARCH	12.01 -0.38 -3.1	OTC	24.00 10.75	KOWING INC.	20.50 1.25 6.5	
OTC	15.50 9.25	PARALLAX COMPUTER (H)	15.50 2.00 14.8	OTC	5.88 3.38	KRATON CORP.	5.75 -0.38 -6.6	
OTC	17.00 6.00	PIRAMID TECHNOLOGY	16.75 1.63 10.7	OTC	11.25 5.75	MICROPOLIS CORP.	7.75 0.25 3.3	
OTC	24.00 11.13	SEQUENT COMPUTER SYS.	20.00 -1.75 -8.0	OTC	116.00 93.00	JMC CORP.	113.88 0.00 0.0	
OTC	16.25 3.38	SEQUOIA SYSTEMS INC.	12.38 0.16 6.2	OTC	4.50 5.50	MACRO SYSTEMS	4.50 5.50 122.2	
NYS	48.38 29.50	STRATUS COMPUTER INC.	34.25 -0.25 -0.7	OTC	17.25 6.88	QMS INC.	14.75 -0.38 -2.5	
NYS	16.88 9.88	TANDY COMPUTERS INC.	12.50 1.63 14.9	OTC	17.88 11.63	QUANTUM CORP.	13.88 0.00 0.0	
OTC	19.00 10.63	TECHNICAL SYSTEMS (H)	16.75 0.75 4.5	OTC	3.62 1.25	RESEARCH	3.62 1.25 34.2	
NYS	13.88 7.75	UNISYS CORP.	12.00 0.13 1.1	OTC	16.25 7.50	RECOGNITION ENGINEERING	13.50 -0.50 -3.6	
SOFTWARE								
Up 0.1%				OTC	13.88 4.50	REXON INC.	13.75 -0.10 -17.4	
OTC	63.50 25.25	ADOTE SYSTEMS INC.	61.13 2.13 3.4	OTC	23.12 12.00	SAGATAC TECHNOLOGY	11.38 -2.40 -21.1	
OTC	21.00 10.25	ALDUS CORP.	14.50 -0.75 -4.9	OTC	39.13 18.00	STORAGE TECHNOLOGY	39.13 2.75 7.6	
OTC	14.25 5.50	AMERICAN SOFTWARE CORP. (L)	6.75 0.88 14.9	NYS	27.88 16.88	STRATONIX INC.	26.25 -0.25 -0.9	
OTC	28.13 9.75	ASC COMPUTER SYSTEMS	12.75 0.13 1.0	OTC	88.88 66.75	TEKPIX CORP.	75.63 1.13 1.5	
OTC	56.50 30.75	AUTODESK INC.	48.75 3.50 7.7					
OTC	13.00 2.50	BACHMAN INFO. SYSTEMS	3.38 0.50 17.4					
OTC	43.00 34.75	BGS SYSTEMS INC.	35.00 -1.00 -2.9					
OTC	84.13 37.25	BMC SOFTWARE INC.	55.50 4.00 7.8					
OTC	28.25 17.00	BOULE & BARBAGE	21.25 -1.50 -6.6					
OTC	54.50 17.50	BORLAND INT'L INC.	26.00 -0.13 -0.5					
OTC	6.50 3.00	C E SOFTWARE	3.88 -0.25 -6.1					
ASE	28.25 6.25	CHEYENNE SOFTWARE INC.	27.00 -0.25 -0.9					
OTC	19.50 8.25	CHIPSOFT	9.75 0.75 7.1					
OTC	9.75 5.63	CIOSOS INC.	6.25 0.00 0.0					
NYS	27.38 10.88	COMPUTER ASSOCIATES	26.38 0.38 1.4					
NYS	12.38 2.75	COMPUTERVISION CORP.	4.50 1.38 44.0					
OTC	24.25 19.25	CONVEX COMPUTER	21.75 0.25 1.2					
OTC	5.75 5.75	CORPAC INC.	5.75 0.63 10.9					
OTC	17.25 10.75	CORREL CORP.	14.75 -0.50 3.5					
OTC	29.25 6.00	EASEL CORP.	14.75 -0.88 -12.5					
OTC	25.25 12.00	4TH DIMENSION	20.25 1.00 5.2					
OTC	20.00 6.00	FRAME TECHNOLOGY	12.00 -0.50 -4.2					
OTC	20.75 10.00	GROUP I SOFTWARE	10.00 -0.50 -4.8					
OTC	35.25 18.50	GUITA	18.50 -1.75 8.6					
OTC	3.50 3.50	HEWLETT SYSTEMS INC.	3.4 0.13 3.8					
OTC	25.75 11.25	IMPS	12.35 -1.25 8.6					
OTC	34.75 18.50	INFORMATION RESOURCES	32.50 0.00 0.0					
OTC	12.13 12.13	INFORMIX CORP.	12.00 -0.13 -1.0					
OTC	17.00 9.50	INTERGRAPH CORP.	10.00 -0.63 -5.9					
SEMICONDUCTORS								
Up 1.5%				NYS	32.88 7.38	ADVANCED MICRO DEVICES	28.50 -0.50 -1.7	
NYS	21.38 9.00	ALANAL DEVICES INC.	17.88 -1.50 -7.7	OTC	21.38 9.00	ALANAL DEVICES INC.	17.88 -1.50 -7.7	
OTC	23.25 7.63	AT&T CORP. (H)	22.63 0.00 0.0	OTC	23.25 7.63	AT&T CORP. (H)	22.63 0.00 0.0	
OTC	27.88 10.00	AVANTAGE TECHNOLOGIES	27.88 10.00 0.0	OTC	39.75 13.00	CHRYSLER LOGIC	16.00 -0.13 -0.8	
OTC	12.63 7.38	CYRESS SEMICONDUCTOR CORP.	12.63 7.38 23.2	OTC	12.63 7.38	CYRESS SEMICONDUCTOR CORP.	12.63 7.38 23.2	
OTC	14.63 0.63	DALLAS SEMICONDUCTOR CORP.	14.63 0.63 4.5	OTC	14.63 0.63	DALLAS SEMICONDUCTOR CORP.	14.63 0.63 4.5	
OTC	11.25 4.63	LSI LOGIC CORP.	11.25 4.63 41.3	OTC	14.13 4.63	LSI LOGIC CORP.	11.75 -0.25 -2.1	
OTC	33.25 13.75	LATITUDE SEMICONDUCTOR CORP.	26.25 -0.50 -1.9	OTC	33.25 13.75	LATITUDE SEMICONDUCTOR CORP.	26.25 -0.50 -1.9	
OTC	13.13 1.38	MICRON TECHNOLOGY INC.	13.13 1.38 10.6	OTC	78.00 37.13	MOTOROLA INC.	74.63 -1.88 -2.5	
OTC	14.63 1.88	MOTOROLA INC.	14.63 1.88 -2.5	OTC	15.00 8.50	NATIONAL SEMICONDUCTOR CORP.	14.00 -0.50 -3.4	
OTC	17.00 0.50	NATIONAL SEMICONDUCTOR CORP.	17.00 0.50 3.0	OTC	6.50 6.50	NEC SEMICONDUCTOR CORP.	6.50 6.50 100.0	
OTC	38.00 22.25	SYNOPSIS	35.75 -0.25 -0.7	OTC	65.00 32.25	SYNOPSYS INC.	61.88 0.38 0.6	
OTC	6.88 0.63	TEST INSTRUMENTS (H)	6.88 0.63 9.2	OTC	7.88 2.13	WELTER (H)	7.38 0.63 9.3	
OTC	6.00 0.75	VLSI TECHNOLOGY	6.00 0.75 10.7					
OTC	7.88 2.13	WELTER (H)	7.38 0.63 9.3					
OTC	5.13 -0.13	WESTERN DIGITAL INC.	5.13 -0.13 -2.4					
OTC	37.25 12.50	ZILLOG INC.	26.25 -0.75 -2.8					
PERIPHERALS AND SUBSYSTEMS								
Up 0.4%				OTC	33.75 11.66	AMERICAN POWER CONVERSION	33.25 1.75 5.6	
OTC	18.00 6.25	CAMLEX CORP.	6.50 0.00 0.0	OTC	18.00 6.25	CAMLEX CORP.	6.50 0.00 0.0	
OTC	18.38 6.50	COMINTEGRON CORP.	17.13 -0.25 -1.4	OTC	38.50 10.75	CREATIVE TECHNOLOGIES INC.	29.00 0.38 1.3	
OTC	30.75 14.25	DATA RACE INC.	22.00 0.00 0.0	OTC	30.75 14.25	DATA RACE INC.	22.00 0.00 0.0	
OTC	4.13 1.63	DATAVIEW CORP.	17.13 1.63					

Computer Industry

In
Brief

Loss posted

KnowledgeWare, Inc. last week reported a fiscal third-quarter loss of \$30 million attributed to charges related to layoffs and the acquisition of Matesys Corp. and Ernst & Young's European distribution centers. Sales slipped 5%—from \$27.2 million to \$25.8 million—compared with third-quarter 1992. The Atlanta developer recently laid off 89 of about 800 employees.

Trinzic ekes out profit

Trinzic Corp. posted fiscal fourth-quarter earnings of \$143,000, after accounting for a \$1 million restructuring charge. Trinzic, which was formed via the merger of Aion Corp. and AI Corp., lost \$1.1 million in the like period last year. Fourth-quarter sales were off slightly to \$11.1 million. For the year, the Palo Alto, Calif., firm lost \$8.9 million on revenue of \$41.3 million. Last year, the combined companies lost \$11.7 million on revenue of \$39.7 million.

Poison pill zapped

Ceridian Corp. stockholders voted to eliminate the firm's shareholders rights plan. Such plans are also known as poison pills and can help a company's board of directors determine whether an unsolicited takeover offer is in the best interests of a company or its shareholders. These plans make unsolicited bids costly for a potential buyer and strengthen the board's negotiating position.

SHORT TAKES 21st CenturyNet, Inc. in Richardson, Texas, has received \$5 million in venture financing from InterWest Partners, Sevin Rosen Funds and Compaq Computer Corp. to develop technologies to enable portable computers to access corporate information systems via wireless and wired media.

Progress strategy paying off

Firm eschews database engines, focuses on application development tools

By Derek Slater
BEDFORD, MASS.

■ When the little guy takes on the big guys, it is wise to try an end run rather than go straight through the line of scrimmage.

That is the tactic Progress Software Corp. is employing in its battle against massive Oracle Corp. and other big players in the "open" database management system market.

Although Progress sells a complete relational DBMS, the company is focusing on the application development tools market. The strategy makes sense given that Progress is ranked a distant fifth in the \$1.2 billion Unix DBMS market with a 4% share, according to International Data Corp. (IDC).

"Compared to Oracle, we tend to focus more on selling to the individual lines of business within a big company," explained Joseph Alsop, president and co-founder of Progress Software. According to Alsop, individual departments tend to require more customized applications. While central accounting at a big conglomerate may purchase Oracle Financials, Alsop said, the arms of the company may each require customized applications that Progress relies on.

Applications written with Progress tools can run on top of an Oracle database as well as over the Progress engine.

Healthy growth

If growth is any measure, then Progress' strategy is succeeding. For the first fiscal quarter of 1993, the company tallied a 35% revenue gain to \$25 million, with net income up 55% to \$3.8 million. The firm has maintained a 15% profit margin for the past two fiscal years.

Recently, though, investors on Wall Street have shown some concerns about Progress Software. The company's share price eroded from a 52-week high of 61 to a value in the mid-30s earlier this month.

Christopher Mortenson, a software analyst at Alex. Brown & Sons, Inc., said the drop-off likely stemmed from delays in the delivery of the next generation of Progress products. Version 7 of Progress was originally announced for late 1992 delivery; it is now due in the third quarter of this year.

Progress shares rebounded to the mid-40s last week, and Mortenson said he expects continued improvement. "I don't think it damages them in the long term, or even in the short term, except for their credibility," Mortenson said, referring to the product delays. Progress has a solid cash base and is positioned to support continued growth, which Alsop attributed to an extremely conservative management policy.

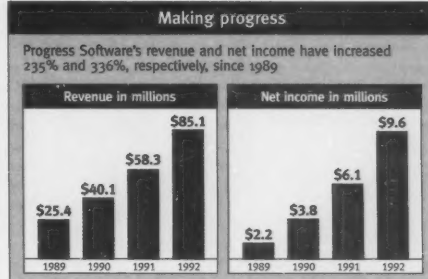
"If anything, we actually generate cash as we grow, which is pretty unusual," Alsop said.

More than two-thirds of Progress' revenue stems from its Unix products, though the company recently raised the curtain on a native version for the IBM Application System/400. The company depends heavily on a network of more than 2,000 resellers that build custom applications with Progress tools; roughly 60% of the company's revenue comes from that channel.

Clarence Johnson, director of information services at Herndon, Va.-based air transportation company WorldCorp., said the company relied heavily on reseller-supplied Progress applications when it began a transition from mainframes to a Unix-based client/server architecture.

"Today, though, our programmers are handling everything in-house, and they're delighted with it," Johnson said, noting that the company's longtime Cobol programmers had relatively little difficulty moving to the Progress fourth-generation language.

New challenges lay ahead; the RDBMS heavyweights are unlikely to leave Progress Software's niche undisturbed. Oracle's recently announced Cooperative Develop-



Source: Progress Software Corp.

CW Chart: Nancy Kowal

ment Environment products indicate renewed attention to developers.

The advantage of Progress' tools lies not in advanced features but in tight integration with the database, noted Richard Finkelstein, president of Performance Computing, Inc. in Chicago. "What they have is a reasonable 4GL that works well with their engine and is easy to use," Finkelstein said. "As far as tool features and capabilities, they are in the middle of the pack."

Tools may not be enough to sustain growth, analysts said. Progress lags behind Oracle and Sybase, Inc. in offering leading-edge RDBMS features such as stored procedures and referential integrity, Finkelstein said. Such features are one way vendors can differentiate themselves, he said. Progress may choose to emphasize tools, but that does not mean engine technology is irrelevant, he noted.

"It's very expensive to compete with Oracle, and I don't even think [Progress] management is interested in getting into the technology race" at the engine level, Finkelstein said. Progress Software bumped up its research and development spending last year from 12% of total revenue in 1991 to 15% in 1992. However, a significant portion of the additional expense went toward the release of the AS/400 version of Progress, not the development of advanced engine features.

Alsop said the company will not be distracted from its tools orientation. "We plan to focus on speeding up the development process. The competitive landscape is tilted more in our favor than ever," Alsop said.

Portability key

Progress touts portability of its applications as one of its strengths. An application developed under DOS can be moved to Windows, VMS, Unix or CTOS and deployed as a Novell, Inc. NetWare Loadable Module—all without rewriting any code. Progress also supports IBM's OS/2 and OS/400 operating systems. Applications written with Progress tools can run on top of Oracle and DEC Rdb databases as well as RMS file structures.

Revenue up

Progress' Unix revenue grew 46% in 1992, keeping pace with the overall 47% expansion of the Unix RDBMS market, according to IDC. Among the Top 10 vendors, only Informix Corp. and Sybase, Inc. grew faster than Progress. Sybase's 1992 Unix revenue jumped 91%, to \$180 million. Oracle remains the front-runner with \$501 million in Unix revenue, up 40% from the previous year. IDC pegs Oracle's share of the total Unix RDBMS market at more than 44%.

Wysiwyg

ACHY BREAKY FEET

At last fall's Comdex, Marisa Verson (left) and Cathy Brooks of S&S Public Relations, Inc. in San Francisco covered the 9 1/2 miles of convention floor with rollerblades. What's up for this year?

Look for the pair at Comdex/Spring '93 flying by on "snake boards," a souped-up version of the skateboard.



From our reader files:

Eek! A user was complaining that a newly set up PC and menu system weren't working. The user was unable to select choices with the mouse and had no control over the cursor position, other than moving it slightly. After diagnostics and checking setup files and the PC connection, I asked a seemingly obvious question: "Is the mouse on a flat surface?" "Why no," the user replied, "I am waving it in the air."

— Steve Knechtly,
Systems Administrator,
Cincinnati Belting and
Transmission Co.

OVERHEARD

at a recent KnowledgeWare user group show:
DOS Perot — You boot it up and a message appears saying, "I'm THINKING about running."

GREAT BOOK NAMES
THE JOY OF X:
AN OVERVIEW OF THE
X WINDOW SYSTEM
By Niall Mansfield
(Addison-Wesley, 1993)

HAVE ANY ODD STORIES ABOUT YOUR BOSS? WE WANT TO KNOW ABOUT THEM. CALL LORY ZOTTOLA DIX AT (800) 343-6474 EXT. 236 OR FAX TO (508) 875-8931.

The Fifth Wave by Rich Tennant



"I'm waiting for my AUTOEXEC file to run, so I'm gonna grab a cup of coffee, maybe make a sandwich, check the sports page, remind the brake drums on my truck, balance my checkbook for the past 12 years, learn Swahili...."

Inside Lines

Summertime blues?

Microsoft has been fending off rumors that Windows NT will arrive later than its announced end-of-June time frame. Some analysts and users said NT could be as late as Labor Day. But at least one analyst said Microsoft may have one force on its side of the fence pushing hard to get NT out on time — DEC. DEC wants to sell Alpha hardware, but to do that in any quantity requires Windows NT, and every delay will cost DEC money, the analyst explained. Another view comes from John Dunkle at WorkGroup Technologies, who said Microsoft is willing to take the marketing hits if NT is late in order to ensure the operating system is as bug-free as possible.

Safety in numbers

When IBM formally unwraps OS/2 2.1 at a bicoastal announcement this week, several PC makers, including Zenith Data and AST, are expected to reveal plans to preinstall OS/2 2.1 on some PCs. However, another source said that not only is 2.1 not in the channel yet, but as of last week, IBM had still not mastered the code. IBM also may have to address reports that efforts to provide faster and seamless cut and paste between OS/2 2.1 and Windows 3.1 have hit snags with nonconforming Windows apps and difficulties with DDE, OLE and the Super VGA driver.

And storage for all

Later this week, IBM's Advanced Workstations Division and Emass Storage System Solutions in Dallas, a unit of E Systems Corp., will announce an agreement to link RS/6000 computers to Emass' data storage systems. That will give RS/6000 users access to up to 10,000T bytes of information through Emass' Data Tower and Data Library storage devices.

Developing a spine

Router rivals Cisco and Wellfleet are reportedly poised to gain new-generation IPX code from Novell for beefing up routing of the NetWare transport protocol across WANs, according to a source close to Novell. An analyst interpreted this to mean that Novell is enhancing its IPX routing algorithms — software that allows multiple routers to exchange key network configuration information — to position IPX as a potential backbone protocol suited to today's sprawling enterprise networks.

Still kicking

Contrary to rival-spread rumors, DEC is still very much on the ball with its Pathworks strategy for selling VAXs and Alphas as LAN servers. Pathworks for NetWare is slated to ship on schedule next month, which will allow Novell clients to use IPX to access DEC VAX file-sharing and E-mail services. Next week at Comdex/Spring '93, DEC will announce a Microsoft Windows NT version of Pathworks. And later this year, DEC will debut its "next generation," which is supposed to provide interoperability and integrated management across NetWare, AppleShare and LAN Manager servers.

One-upmanship

While DEC introduced PCs with PCMCIA options last week, Hewlett-Packard will top that by putting PCMCIA drives into all of its PCs, sources said. Driven by HP's compute-everywhere strategy, its new Vectras, due out June 1, will support either two Type III PCMCIA cards or four Type II cards. Look for a slew of vendors to follow suit in the near future, including the IBM PC Co.

Microsoft seems to be big on city names as code names for operating systems projects. The two most recent are "Cairo" and "Chicago." When asked the reason behind the names, Microsoft Chairman Bill Gates said that Cairo, the company's object-oriented operating environment, was supposed to be exotic sounding. As for Chicago, otherwise known as Windows 4.0, he said they were looking for something between Cairo and Microsoft's home in Redmond, Wash. Phone, fax or Computer-Serve News Editor Alan Alper with news tips at (800) 343-6474, (508) 875-8931 or 76537,2413, respectively. Or try Computer-world's 24-hour voice-mail tip line at (508) 820-8555.

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- ☒ RESOLVE PLATFORM ISSUES
- ☐ DEAL WITH DATA MANAGEMENT

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